



# Service Manual

• KEH-M7300/EW



ORDER NO.  
**CRT1382**

MULTI-CD CONTROL FM/MW/LW TUNER DECK AMPLIFIER

# KEH-M7300

EW

# KEH-M7300SDK

WG

MULTI-CD CONTROL FM/AM TUNER DECK AMPLIFIER

# KEH-M7200

US

# KEH-M7250

CA, ES

# KEH-M550

US

## Note:

- See the separate manual CX-197 (CRT1328) for the cassette mechanism description.
- Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

## CONTENTS

1. USING THE REMOVABLE FRONT PANEL.....	3
2. ADJUSTING VOLUME AND TONE.....	4
3. USING THE RADIO.....	5
4. USING THE TAPE DECK.....	5
5. PLAYING COMPACT DISCS.....	6
6. BLOCK DIAGRAM.....	7
7. DISASSEMBLY.....	9
8. ADJUSTMENT.....	10
9. CONNECTION DIAGRAM (KEH-M7250/ES).....	23
10. SCHEMATIC CIRCUIT DIAGRAM (KEH-M7250/ES).....	27
11. SCHEMATIC CIRCUIT DIAGRAM (KEH-M7300/EW, M7300SDK/WG).....	30
12. CONNECTION DIAGRAM (KEH-M7300/EW, M7300SDK/WG).....	33
13. CONNECTION DIAGRAM (KEH-M7200, M550, M7250).....	37
14. SCHEMATIC CIRCUIT DIAGRAM (KEH-M7200, M550, M7250).....	41
15. CIRCUIT DIAGRAM AND PATTERN.....	44
16. CHASSIS EXPLODED VIEW.....	50
17. KEY BOARD UNIT EXPLODED VIEW.....	54
18. CASSETTE MECHANISM ASSY EXPLODED VIEW.....	55
19. PACKING METHOD.....	62
20. ELECTRICAL PARTS LIST.....	64

**PIONEER ELECTRONIC CORPORATION**

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30/26  
ES MAY 1991 Printed in Japan

## SAFETY INFORMATION (US MODEL)

### **CAUTION**

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.

Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

### **WARNING**

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5). When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

## SPECIFICATIONS (KEH-M7300/EW)

### **General**

Power source .....	14.4 V DC (10.8 – 15.6 V allowable)
Grounding system .....	Negative type
Max. current consumption .....	7.5 A
Dimensions (chassis) .....	180 (W) x 50 (H) x 150 (D) mm
(front face) .....	188 (W) x 58 (H) x 19 (D) mm
Weight .....	1.6 kg

### **Amplifier**

Maximum power output .....	25 W x 2/15 W x 4 (EIAJ)
Continuous power output .....	11 W x 2 (1% dist. at 1 kHz)
Load impedance .....	4 Ω (4 – 8 Ω allowable)
Max. output level/output impedance (preout) .....	500 mV/1 kΩ
Tone controls (bass) .....	±10 dB (100 Hz)
(treble) .....	±10 dB (10 kHz)
Loudness contour .....	+12 dB (100 Hz), +7 dB (10 kHz) (Volume: -30 dB)

### **Tape player**

Tape .....	Compact cassette tape (C-30 – C-90)
Tape speed .....	4.76 cm/sec. (+0.14 cm/sec., -0.05 cm/sec.)
Fast forward/rewind time .....	Approx. 100 sec. for C-60
Wow & flutter .....	0.13 % (WRMS)
Frequency response .....	Metal: 40 – 17,000 Hz (±3 dB)
Stereo separation .....	45 dB

### **Signal-to-noise ratio**

..... Metal: Dolby B NR IN: 63 dB (IEC-A network)
..... Dolby NR OUT: 55 dB (IEC-A network)

### **FM tuner**

Frequency range .....	87.5 – 108 MHz
Usable sensitivity .....	11 dBf (1.0 µV/75 Ω, mono, S/N: 30 dB)
50 dB quieting sensitivity .....	16 dBf (1.7 µV/75 Ω, mono)
Signal-to-noise-ratio .....	70 dB (IEC-A network)
Distortion .....	0.3 % (at 65 dBf, 1 kHz, stereo)
Frequency response .....	30 – 15,000 Hz (±3 dB)
Stereo separation .....	40 dB (at 65 dBf, 1 kHz)

### **MW tuner**

Frequency range .....	531 – 1,602 kHz
Usable sensitivity .....	18 µV (25 dB) (S/N: 20 dB)
Selectivity .....	50 dB (±9 kHz)

### **LW tuner**

Frequency range .....	153 – 281 kHz
Usable sensitivity .....	30 µV (30 dB) (S/N: 20 dB)
Selectivity .....	50 dB (±9 kHz)

### **Note:**

Specifications and the design are subject to possible modification without notice due to improvements.



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302

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Selectivity .....	50 dB (±9 kHz)

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Frequency range .....	153 – 281 kHz
Usable sensitivity .....	30 μV (30 dB) (S/N: 20 dB)
Selectivity .....	50 dB (±9 kHz)

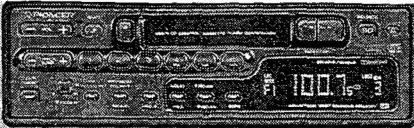
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MULTI-CD CONTROL FM/AM TUNER DECK AMPLIFIER  
**KEH-M7200**

US

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6. BLOCK DIAGRAM.....	7
7. DISASSEMBLY.....	9
8. ADJUSTMENT.....	10
9. CONNECTION DIAGRAM (KEH-M7250/ES).....	23
10. SCHEMATIC CIRCUIT DIAGRAM (KEH-M7250/ES).....	27
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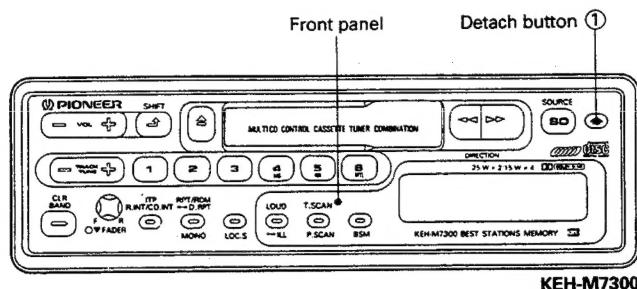


## 1. USING THE REMOVABLE FRONT PANEL

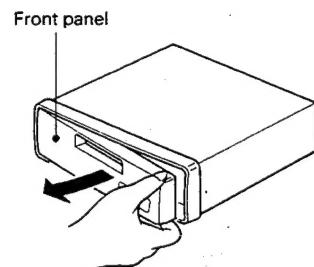
The front panel of this unit can be removed to prevent theft.

### Detaching the Front Panel

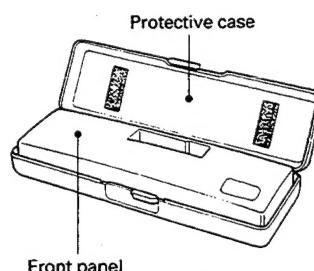
1. Press button ①, and the right-hand side of the panel will eject.



2. To remove the front panel, pull its right-hand side toward you.



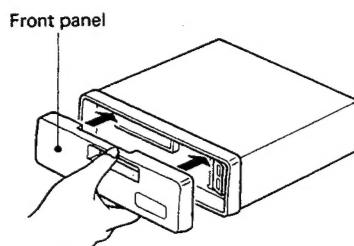
- Take care not to put pressure on the display or drop the front panel.
- 3. Enclose for safekeeping the front panel that is removed in the supplied protective case.



### Replacing the Front Panel

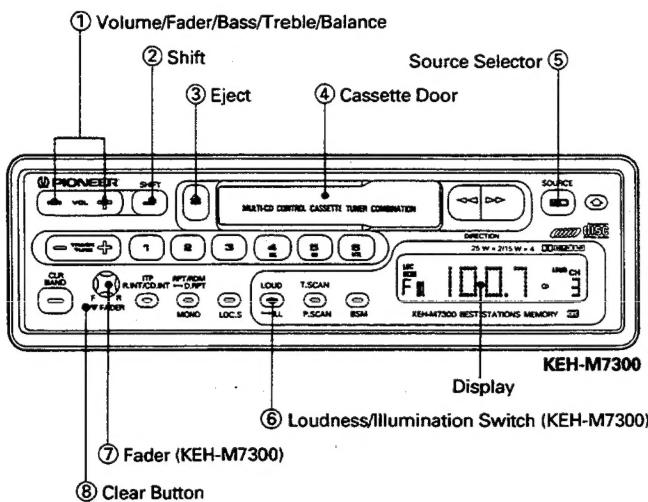
Push the front panel into the main body.

- When replacing the front panel, do not put pressure on the display or control buttons.



- Note that if the front panel is not attached correctly, pushing button ① may not release the panel, and the other control buttons may not function.

## 2. ADJUSTING VOLUME AND TONE



### Using the Clear Button

Once all wiring is complete, press button ⑧ with a thin, pointed object. Though not a normal occurrence, the microprocessor which controls the operation of this unit can be affected by electrostatic noise. This generally is indicated by such symptoms as no power being supplied when you switch the unit on, failure of buttons and controls, or an abnormal display. Should this happen, press button ⑧ with a thin, pointed object to reset the microprocessor.

### Switching Power On

#### Radio

Press button ⑤ to switch the tuner power on. Press button ⑤ again to switch the power off.

#### Tape

Insert the cassette tape through the Cassette Door ④, and the power will be automatically turned on to get the tape start being played back. To eject the tape, press the button ③.

### Changing the Source

When the cassette tape is inserted, the source changes at each press of the button ⑤: Tape → Radio → OFF. When a Multi-Play CD player — optionally available Multi-Play CD Player CDX-M40, for example — is connected to your unit, the source changes: Multi-Play CD Player → Tape → Radio → OFF.

### Adjusting Volume/Fader/Bass/Treble/Balance

To adjust volume, press the button ①. The display changes at each press of the button ②: Volume → Fader → Bass → Treble → Balance. Press the button ① to adjust the displayed mode.

#### Adjusting Volume

Pressing the (+) side of button ① increases the volume, while the (-) side decreases it.



### Adjusting the Fader

#### KEH-M6300:

This function controls the balance between the front and rear speakers of a 4-speaker system. Pressing the (-) side of button ① shifts the balance to the front speakers, while the (+) side shifts it to the rear speakers. In the case of a 2-speaker system, set the display to "F-R0" (or "F-F0").

#### KEH-M7300:

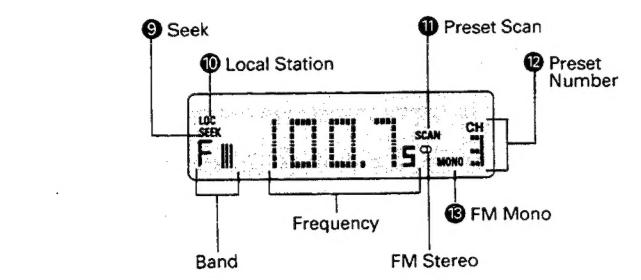
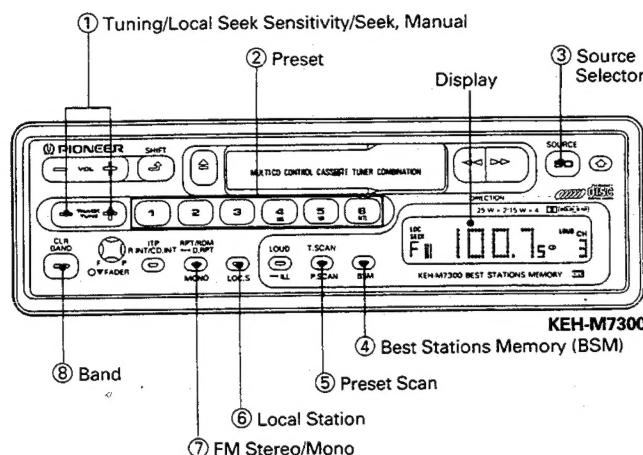
This fader controls the balance between speakers ① and ②, and speakers ③, which are shown in Figure 1 on page 8. Press the (-) side of button ① to raise the volume of speakers ① and ② only; press the (+) side to raise the volume of speakers ③ only.



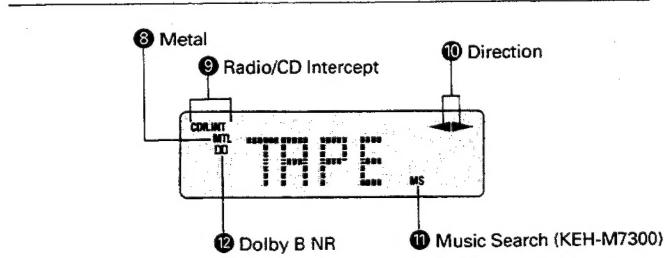
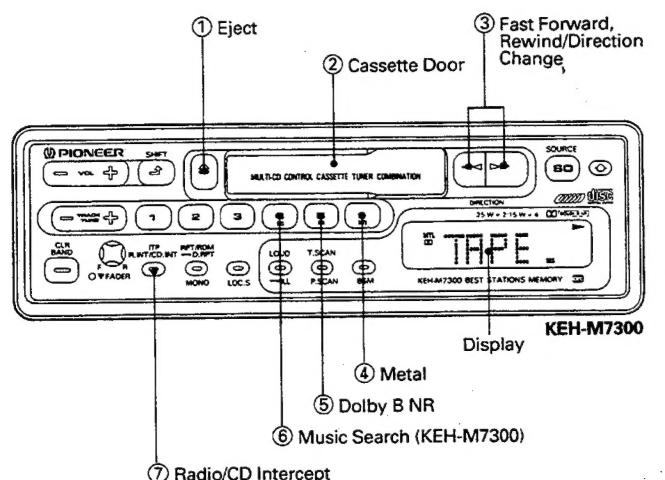
#### Note:

- The KEH-M7300 has two faders: the electronic preamp fader and the power fader controlled by fader control knob ⑦. The use of both faders depend on the way the speakers are connected.

### 3. USING THE RADIO



### 4. USING THE TAPE DECK



**1** Press button ③ to switch the radio power on.

**2** Press button ⑧ to select a band.

F → F II → F III → M/L

(FM1) (FM2) (FM3) (MW/LW)

Use Button ① to switch between MW (531–1,602 kHz) and LW (153–281 kHz).

**3** Use seek tuning to tune in a frequency.

Confirm that the SEEK indicator ④ is shown on the display (if not, press the (+) and (-) sides of button ① at the same time). Press the (+) side of button ① to automatically tune in the next higher receivable frequency, and the (-) side for a lower frequency.

**4** Adjust volume and tone

**5** Assign the tuned frequency to one of the buttons in Bank ② (preset memory).

Press and hold down one of the buttons in Bank ② for at least two seconds. The frequency is assigned to the selected button when the preset number ⑫ stops flashing on the display. Up to 18 FM stations (6 each for FM1, FM2 and FM3), and six MW/LW stations can be assigned to the preset memory buttons in Bank ②.

**6** Once a frequency is assigned to a button in Bank ②, you just need to press that button to tune it in.

This also causes the number of the button pressed to appear at position ⑫ on the display.

**1** Insert the cassette tape into the slot ②, and power will be turned on and the tape begin being played back.

At this time, the tape running direction indicator ⑩ will light up.

**2** Adjust volume and tone

**3** To eject the cassette tape, press the button ①.

- A loose or warped label on a cassette tape may interfere with the eject mechanism of the unit or cause the cassette to become jammed in the unit. Avoid using such tapes or remove such labels from the cassette before attempting use.

- Do not try to eject the cassette immediately after insertion, as it will cause malfunction. Wait a few seconds.

#### Changing Program

Push the fast forward and rewind buttons ③ together to switch from one side of the tape to the other (from Side A to Side B or vice versa).

#### Using Fast Forward and Rewind

Since the transport can be in either direction, both the left and right high-speed tape transport buttons ③ can be regarded as fast forward/rewind buttons.

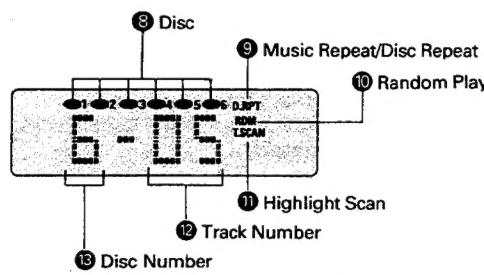
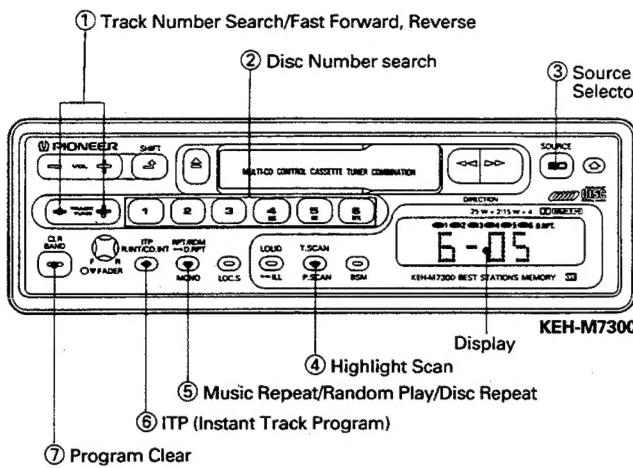
For fast forward, press the high-speed tape transport button ③ that corresponds to the direction that is shown by the direction indicator ⑩.

When the end of the tape is reached, playback will automatically begin from the opposite side of the tape (Auto-reverse).

For rewind, press the button ③ that is opposite that of the direction shown by the direction indicator ⑩. When the end of the tape is reached, playback will automatically begin from the beginning of the same side of the tape (Auto-replay).

Fast forward and rewind can be terminated by pressing the respective opposite high-speed tape transport button ③.

## 5. PLAYING COMPACT DISCS



**[1] Press button ③ to change the display to the Multi-Play CD player mode and to begin disc play.**

Each press of button ③ changes the mode as follows:  
Multi-Play CD player — Tape — tuner — OFF

**[2] Use the Disc Number Search function to select a disc.**

Select the desired disc by pressing one of the buttons in Bank ②. The number of the disc selected appears at position ⑬ on the display.

- Display ③ indicates whether the magazine is loaded or empty.
- If the number at position ⑬ on the display does not change when you press a button in Bank ②, it means that there is no disc loaded in that tray.

**[3] Use Track Number search to select a track.**

Confirm that Track Number is shown at Position ⑫ on the display.

If not, press the (+) and (-) sides of button ① at the same time. Press the (+) side of button ① to increase the number at Position ⑫, or the (-) side to decrease the number. Holding either side of button ① down changes the track number at high speed.

**[4] Adjust volume and tone**

**[5] To stop disc play, press button ③.**

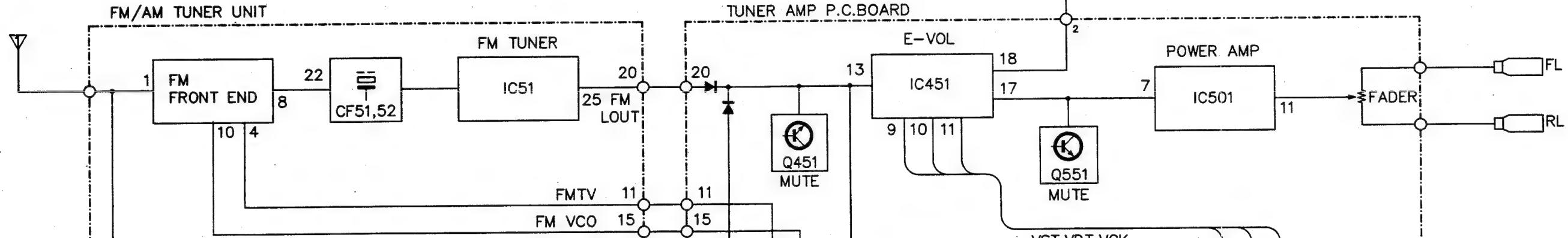
At another press, the normal play resumes from about where it stopped.

- If you stopped operating a Multi-Play CD Player CDX-M100 in the middle of music and then restarted, the player resumes playing from the very beginning of the selection with which you stopped.

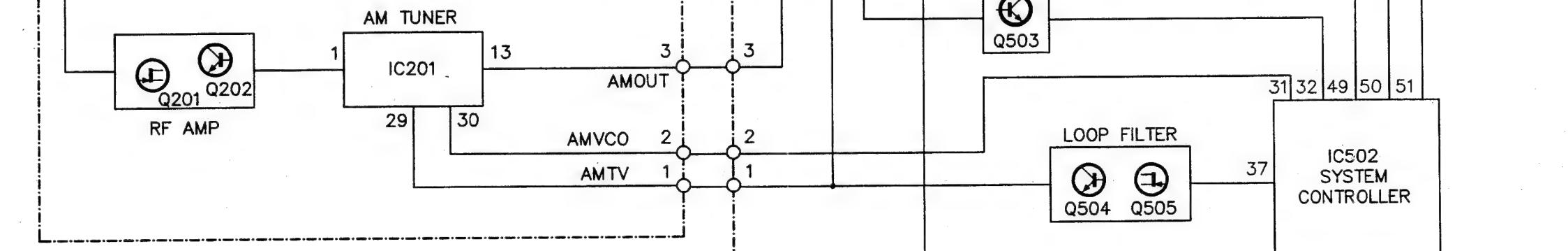
1 2 3 4 5 6

## 6. BLOCK DIAGRAM

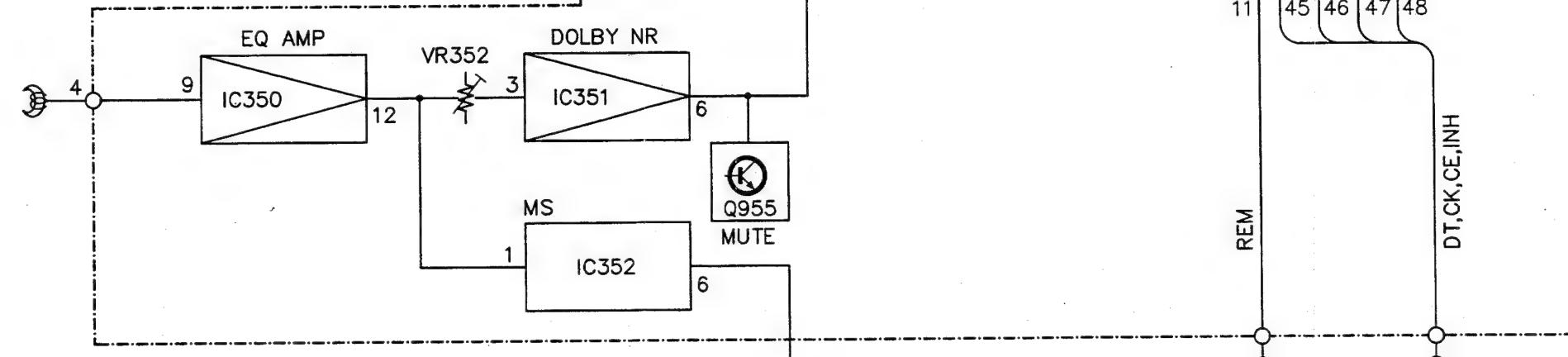
A



B

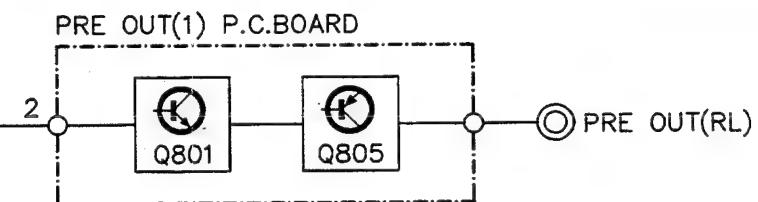


C



D

A



B

C

D

1 2 3 4 5 6 7 8

## 7. DISASSEMBLY

- Removing the case

1. Insert and turn a screwdriver at locations indicated by arrows to remove the case.

- Removing the grille assy

1. Press the detach button, and then pull grille assy.

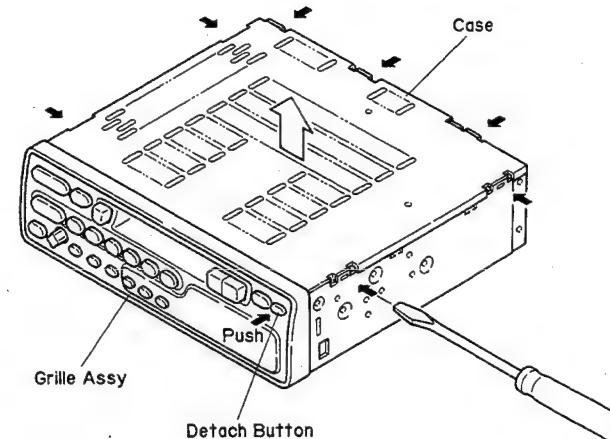


Fig. 2

- Removing the cassette mechanism assy

1. Remove the four screws.
2. Disconnect the connector.
3. Remove the cassette mechanism assy.

- Removing the panel assy

1. Remove the two screws.
2. Disconnect the connector.
3. Remove the panel assy.

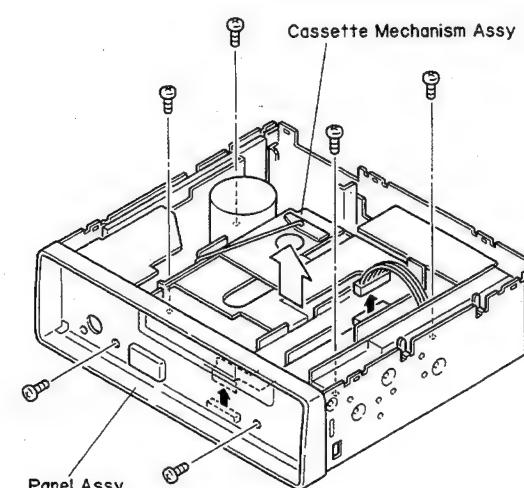


Fig. 3

- Removing the chassis unit

1. Remove the five screws.
2. Remove the antenna plug.
3. Remove the chassis unit.

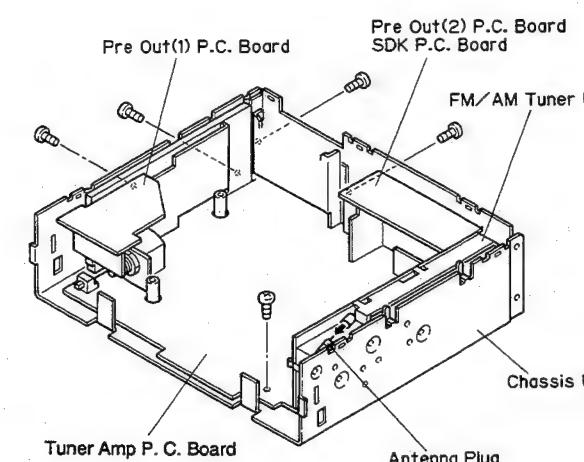


Fig. 4

## 8. ADJUSTMENT

### 8. 1 TEST MODE

Test mode is mainly used in adjustment of CD multi-players.

- Switching to test mode

While pressing the 4, 6 keys together, switch the back-up and the ACC ON.

- Canceling test mode

While pressing the CD multi-player clear button, switch the this unit back-up and ACC OFF.

- Key functions during test mode

The CD multi-player, deck, and tuner are selected by the SOURCE button.

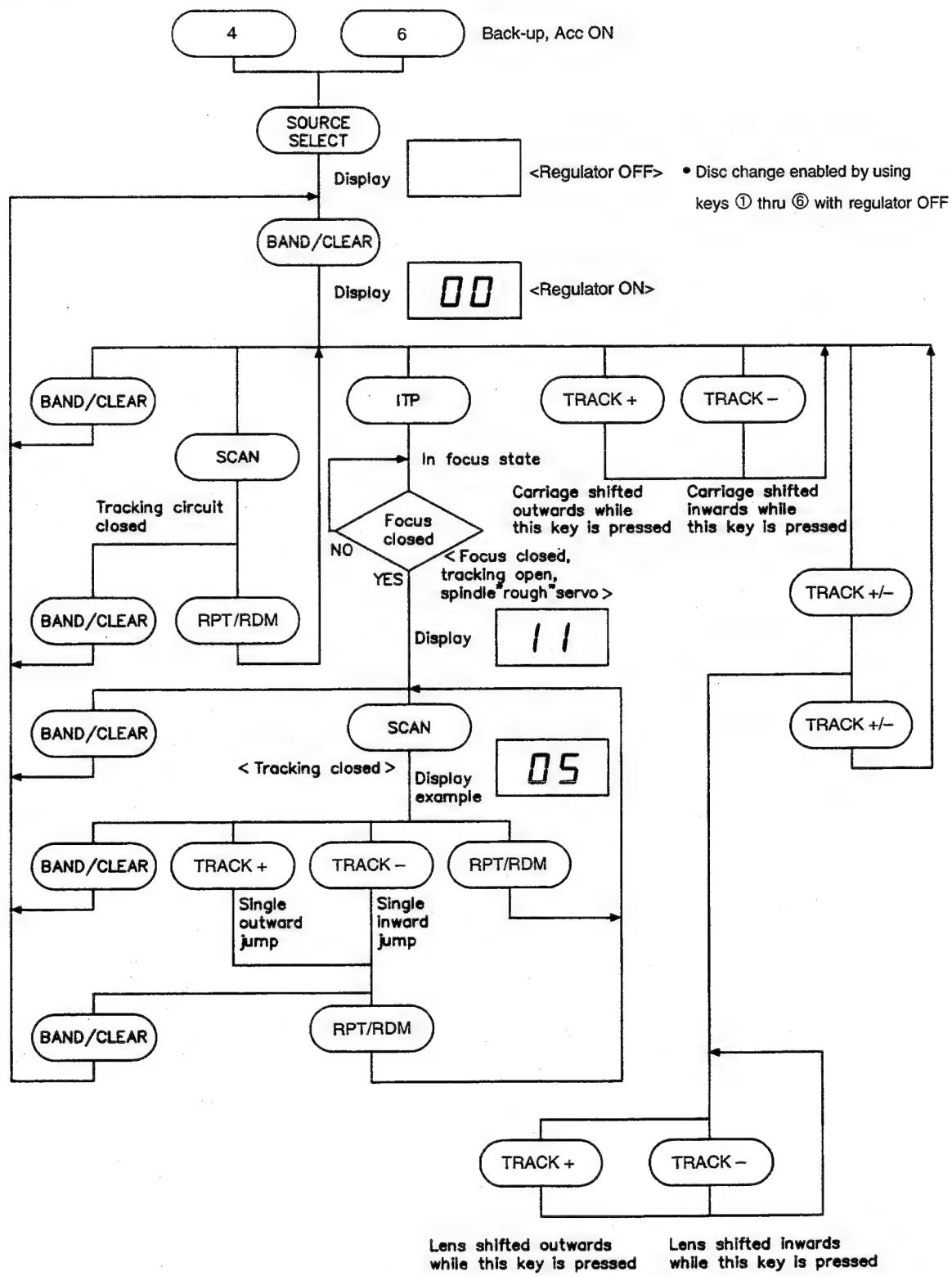
- a) CD multi-player

key	Function
BAND/CLEAR	Regulator ON/OFF
TRACK +	FWD kick
TRACK -	REV kick
SCAN	Tracking close
RPT/RDM	Tracking open
ITP	Focus close
TRACK +/-	Carriage/tracking switching

- b) Deck and tuner

No corresponding function. Normal operation executed.

• Flow Chart

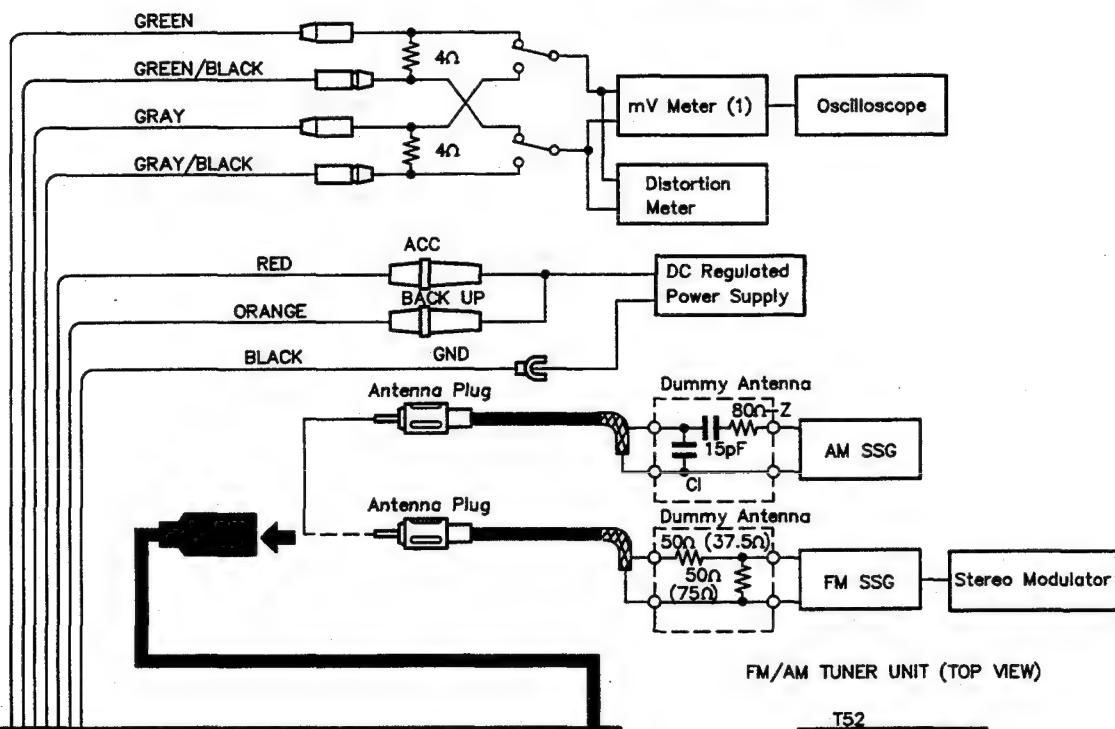


## 8.2 TUNER ADJUSTMENT

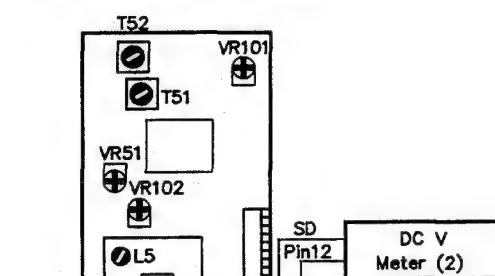
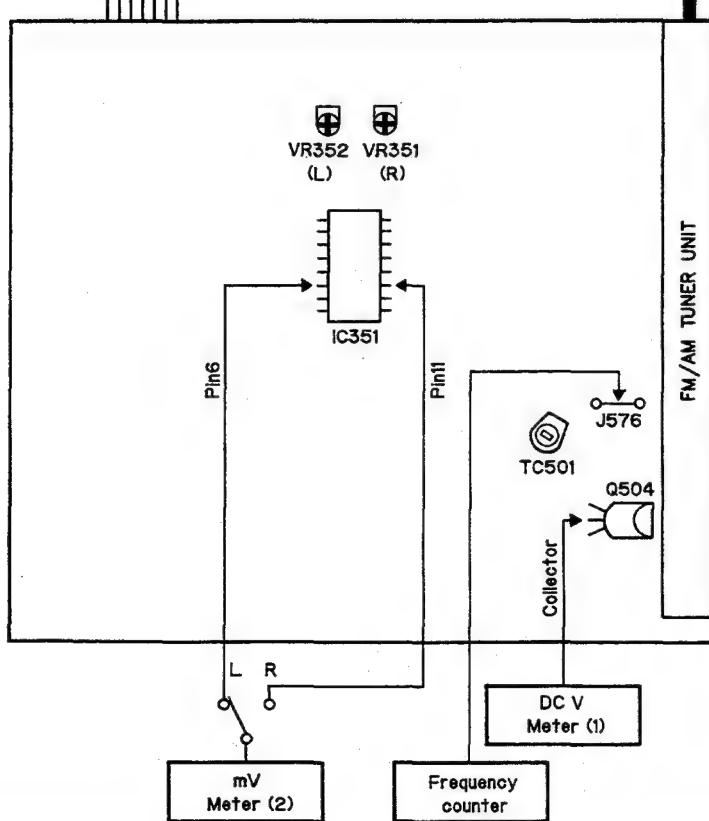
## NOTICE:

Select C1 so that total capacity of 80pF is attained from the direction of the receiver jack.

Z: Output impedance of SSG.



FM/AM TUNER UNIT (TOP VIEW)



FM/AM TUNER UNIT (BOTTOM VIEW)

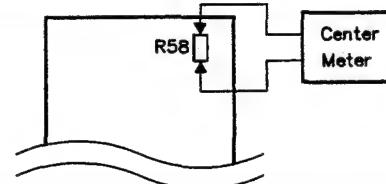


Fig. 5

FM ADJUSTMENT      \* Stereo MOD.: 1kHz, L+R=90% , Pilot=10%  
 \*( ): EW, WG, ES Model

	No.	FM SSG(400Hz, 100%)		Displayed Frequency (MHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency (MHz)	Level (dB $\mu$ V)			
IF	1	98.1	60	98.1	T51	Center Meter:0
	2	98.1	60	98.1	T52	Distortion Meter:Minimum
	3	Repeat No. 1-2 alternately so that the center meter indicates the 0 output and distortion meter indicates minimum output.				
Front End	1			107.9 *(108)	L5	DC V Meter (1) : 6.2 ± 0.2V
	2			87.9 *(87.5)		Verify that DCV Meter (1) is more than 2.1 ± 0.6V
	3	98.1	8	98.1	T1	Oscilloscope:Optimum Symmetry
	4	98.1*	60	98.1	T1	Distortion Meter:Minimum Rotate T1 less than ± 90°
Soft Mute	1	98.1	60	98.1		mV Meter (1) : A dB
	2	98.1	9	98.1	VR102	mV Meter (1) : A-3dB
ARC	1	98.1*	34	98.1	VR101	mV Meter (1) : Separation 5dB
SD	1	98.1	15	98.1	VR51	DC V Meter (2) : Approx. 5V
	2	98.1	14	98.1		Verify that DC V Meter (2) is approx. 0V.
	3	98.1	55	98.1	VR1	DC V Meter (2) : Approx. 5V
	Connect collector of Q2 to GND. Connect DC regulated power supply to pin 3 of FM front end through resistor(330Ω). Add 4.3v from DC regulated power supply.					
	4	98.1	54	98.1		Verify that DC V Meter (2) is approx. 0V.

**AM ADJUSTMENT (US, CA, ES model)**  
 \* ( ) : ES model when tuning step at 9kHz.

	No.	AM SSG(400Hz, 30%)		Displayed Frequency (kHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency (kHz)	Level (dB $\mu$ V)			
Tun-ing Volt	1			1,710 *(1,602)	—	Verify that DC V Meter (1) is less than 6.5V.
	2			530 *(531)	—	Verify that DC V Meter (1) is more than 2.0V.
IF	1	1.000 (999)	15	1.000 (999)	T204, 205, 206	mV Meter(1):Maximum

**MW/LW ADJUSTMENT (EW, WG model)**

	No.	AM SSG(400Hz, 30%)		Displayed Frequency (kHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency (kHz)	Level (dB $\mu$ V)			
Tun-ing Volt	1	(MW MODE)		1,602	—	Verify that DC V Meter (1) is less than 6.5V.
	2	(LW MODE)		153	—	Verify that DC V Meter (1) is more than 2.0V.
IF	1	999	20-25	999	T204, 205, 206	mV Meter(1):Maximum

**DOLBY NR ADJUSTMENT**

No.	Cassette Tape	Adjusting Point	Adjustment Method (Switch Position)
1	NCT-150 (400Hz, 200nwb/m)	VR352 (Lch) VR351 (Rch)	mV Meter(2):-6dBs±1dB (DOLBY NR Switch:OFF)

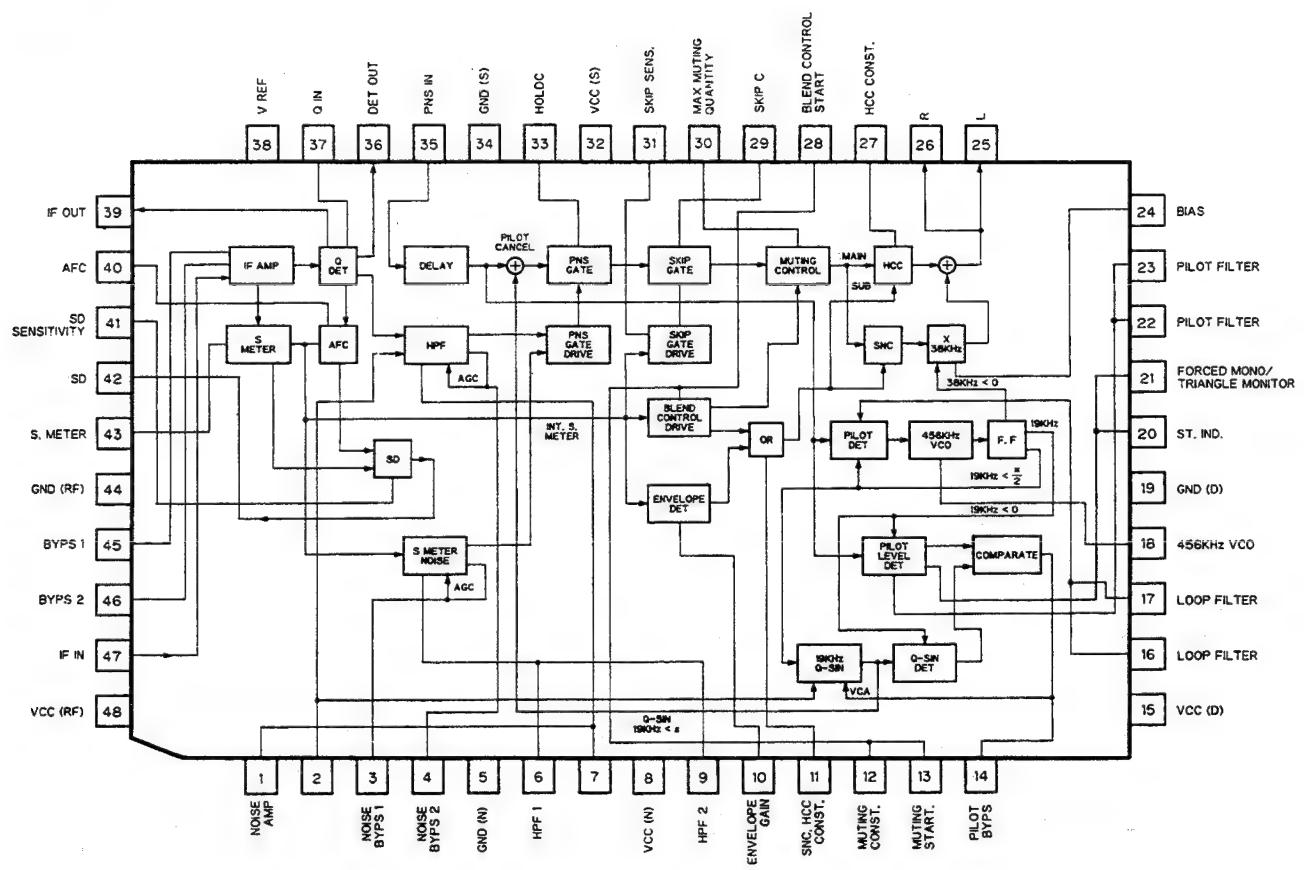
**CLOCK ADJUSTMENT (US, CA, ES model)**

ES model when tuning step at 9kHz.

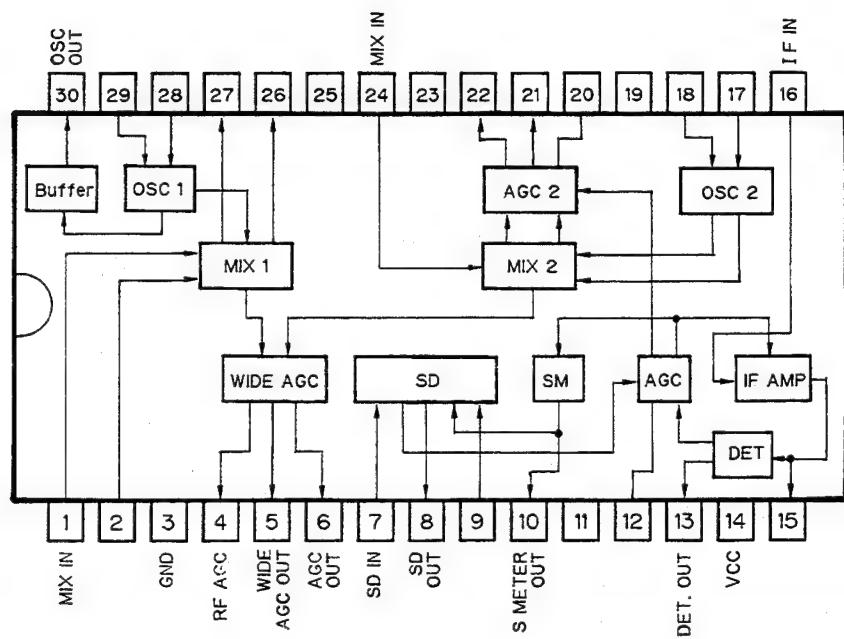
No.	Adjusting Point	Adjustment Method
1	AM Tuner Mode	Display:US, CA model 1,710kHz Display:ES model 1,602kHz
2	TC501	Frequency Counter:US, CA model 12,420kHz±50Hz Frequency Counter:ES model 12,312kHz±50Hz

## •ICs

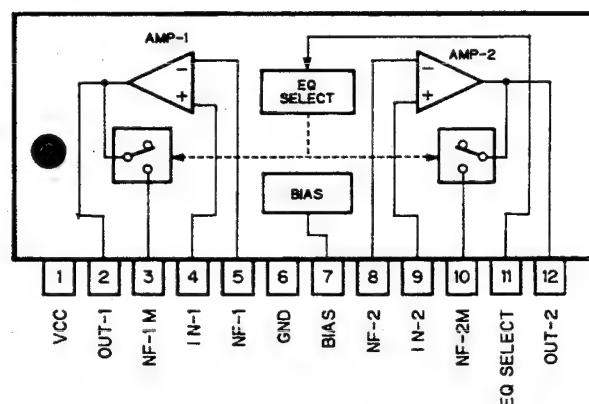
PA4012B



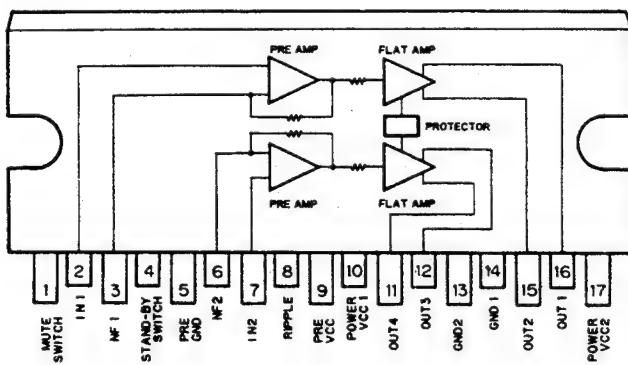
PA4017



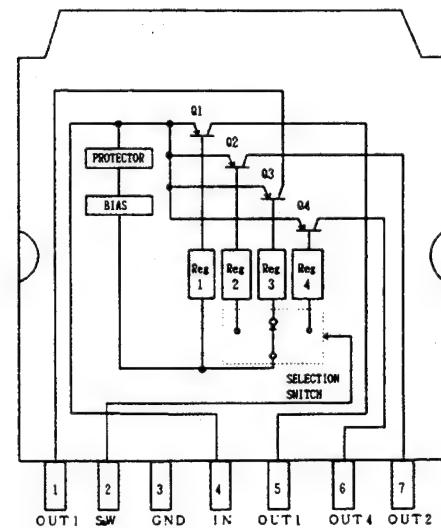
TA8162SN



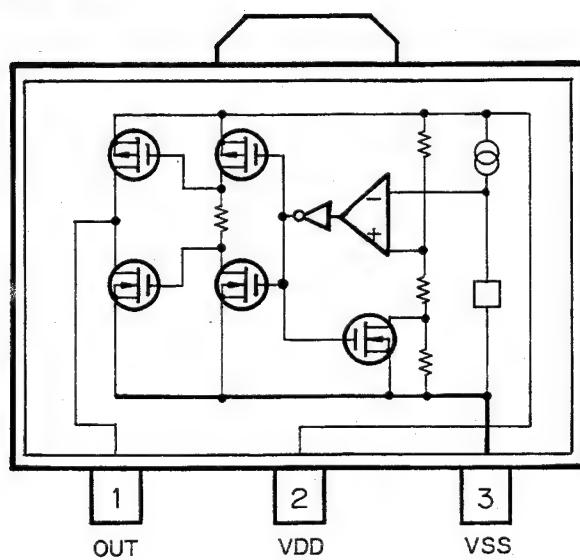
TA8215H-A



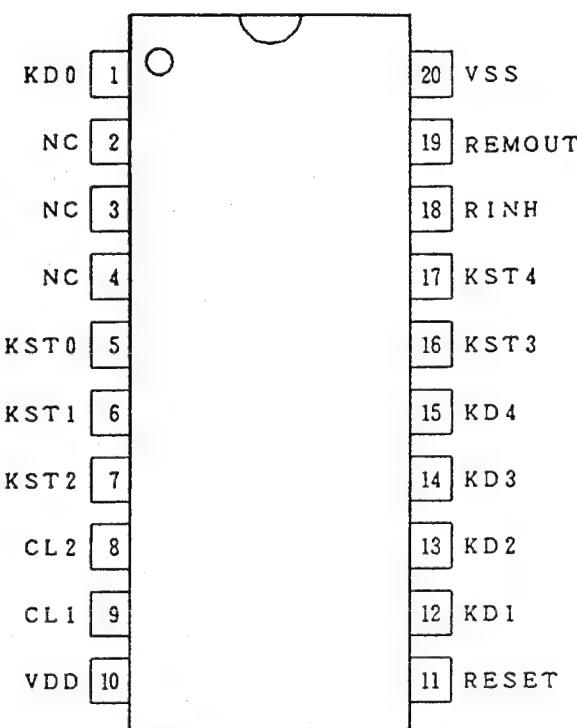
TA8214K



S-80740AH



PD4285



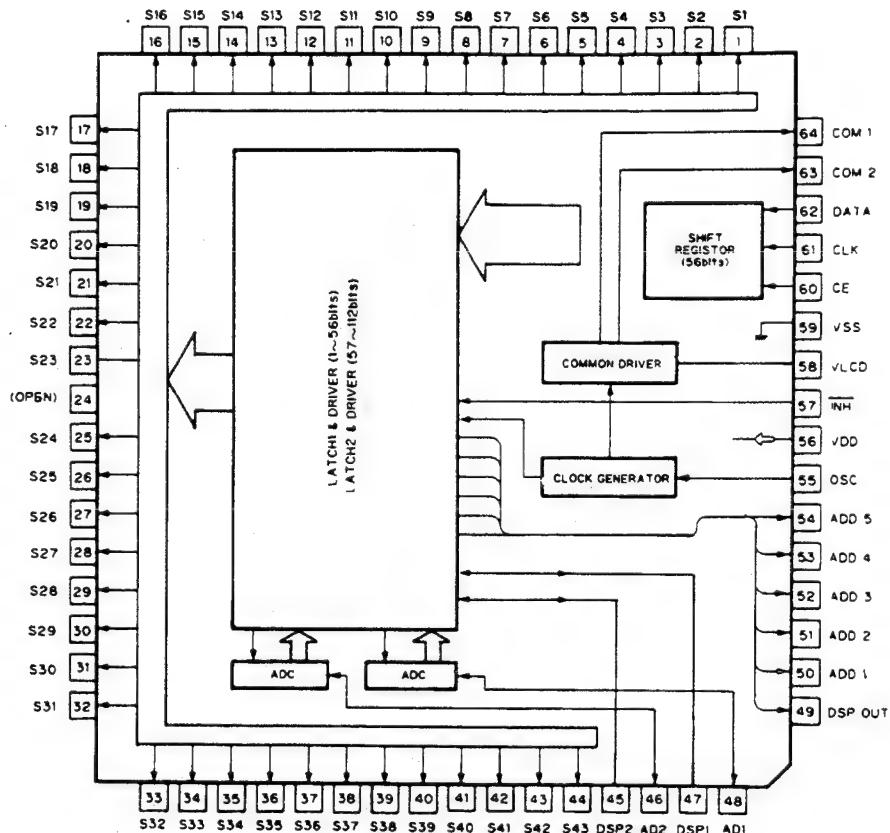
#### •Pin Functions (PD4285)

Pin No.	Pin Name	I/O	Output Format	Function and Operation
1	KDD	INPUT		Key return input
2 - 4	NC			
5 - 7	KST0 - KST2	OUTPUT	NM	Key strobe output
8	CL2			System clock generator connector pin
9	CL1			System clock generator connector pin
10	VDD	INPUT		
11	RESET	INPUT		Reset input
12 - 15	KD1 - KD4	INPUT		Key return input
16, 17	KST3, KST4	OUTPUT	NM	Key strobe output
18	RINH	OUTPUT	NM	Remote controller OFF output when key data is outputed
19	REMOUT	OUTPUT	NM	Remote controller data output
20	VSS			GND

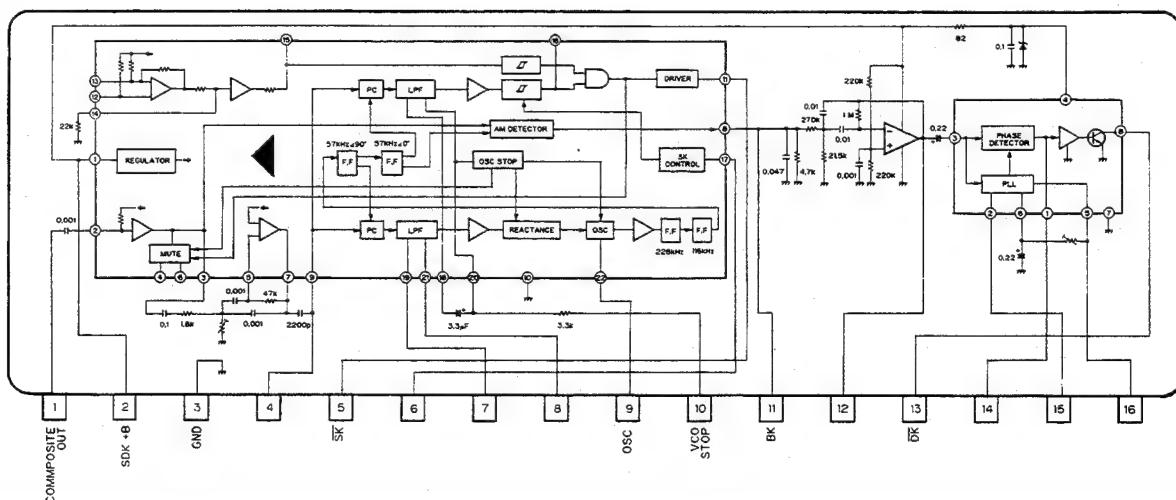
Output Format	Meaning
NM	Neutral resistivity N channel open drain

IC's marked by \* are MOS type.  
Be careful in handling them because they are very  
liable to be damaged by electrostatic induction.

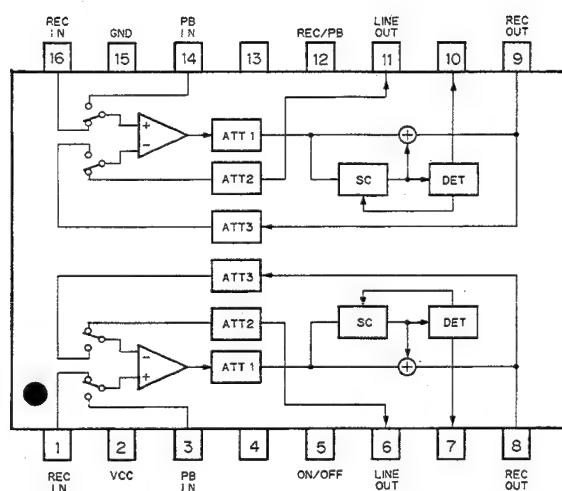
\* LC7582A



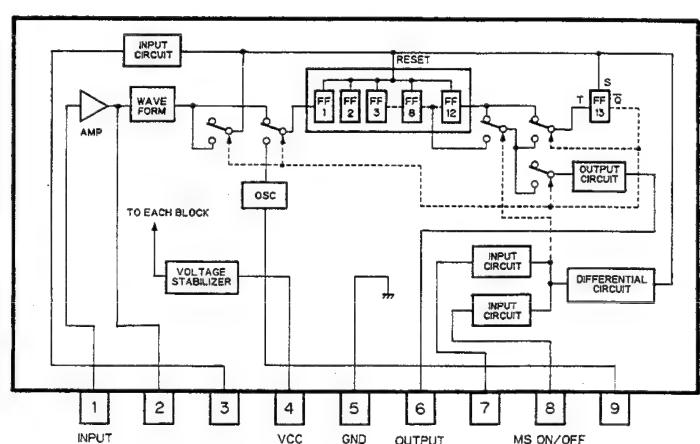
KHAC02



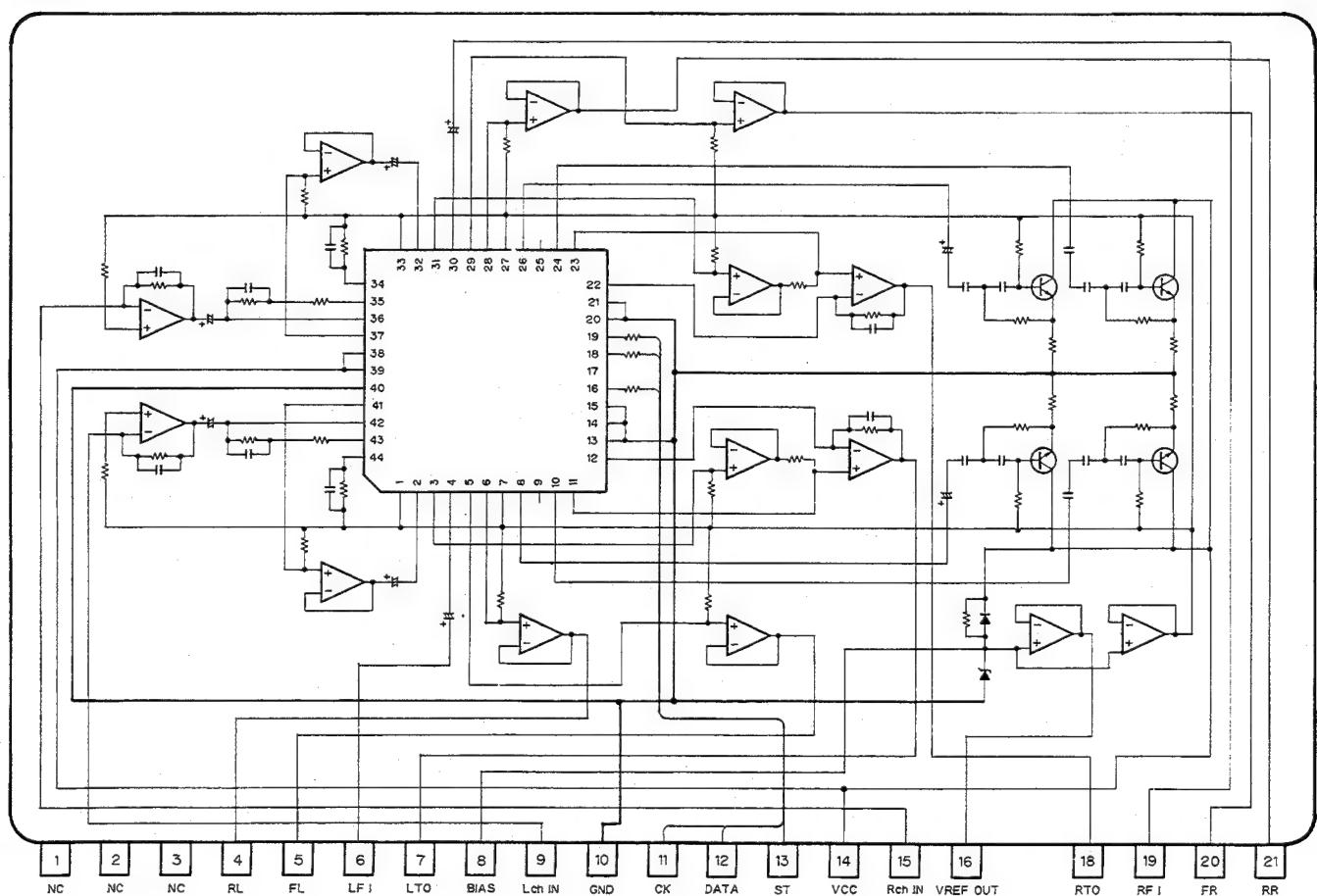
CXA1102P



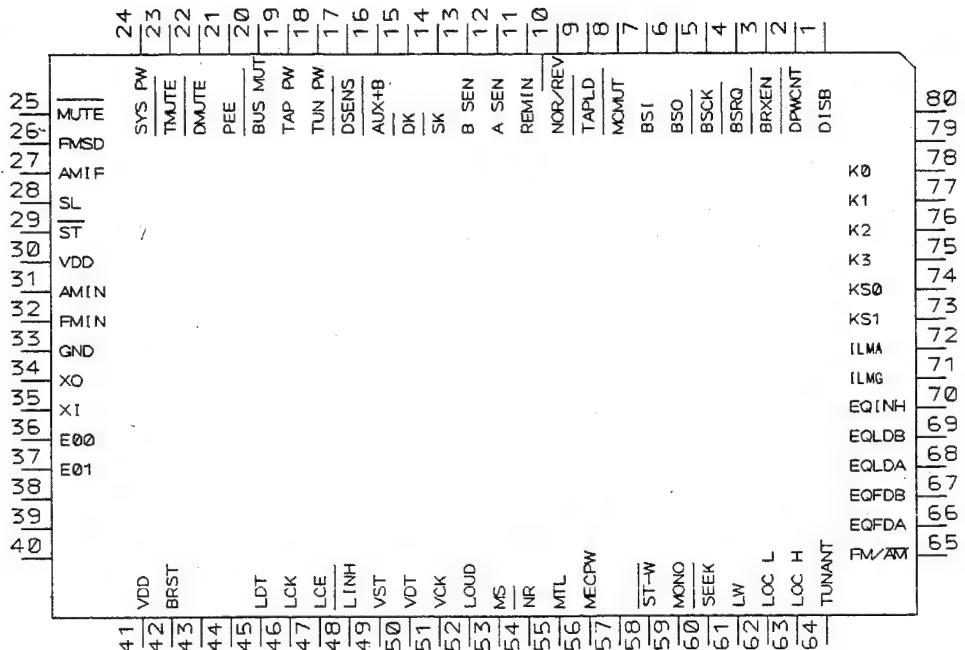
AN6263N



KHA272



\* PD4302  
PD4343A



#### •Pin Functions (PD4302, PD4343A)

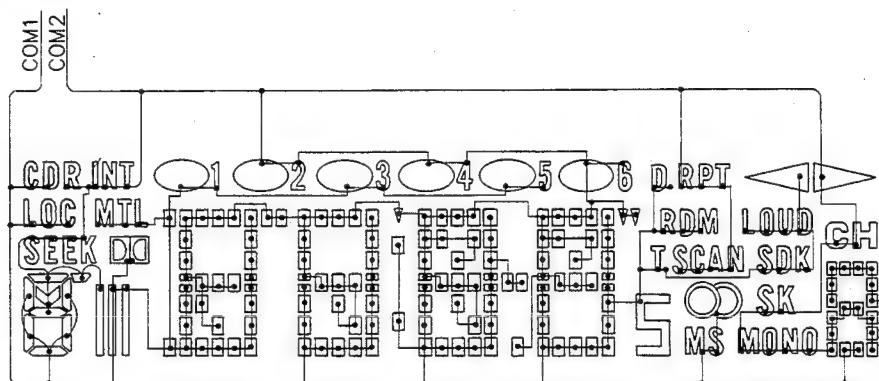
Pin No.	Pin Name	I/O	I/O Format	Function and Operation
1	DISB	Output	C	AUX control output
2	DPWCNT	Output	C	Front panel EJECT/REPLACE control signal output
3	BRXEN	Input/Output		Bus reception enable line
4	BSRQ	Input/Output		Data communications serial poll request
5	BSCK	Input/Output		Bus serial clock input/output
6	BSO	Output		Bus serial data output
7	BSI	Input		Bus serial data input
8	MCMUT	Input		Mechanism mute request
9	TAPLD	Input		Cassette loading input
10	NOR/REV	Input		Deck FWD/REV sensor input
11	REMIN			Key input
12	ASENS			ACC sense input
13	BSENS			Backup sense input
14	SK	Input		SK signal input
15	DK	Input		DK signal input
16	AUX+B	Input		AUX input
17	DSENS	Input		Front panel EJECT/REPLACE sensor input
18	TUNPW	Output	N	Tuner power supply control
19	TAPPW	Output	N	Deck power supply control
20	BUSMUT	Output	N	Bus mute output
21	PEE	Output	C	Beep tone output
22	DMUTE	Output	C	Deck mute output
23	TMUTE	Output	C	Tuner mute output

Pin No.	Pin Name	I/O	I/O Format	Function and Operation
24	SYSPW	Output	C	System power supply control
25	MUTE	Output	C	Mute
26	FMSD	Input		FM IF input
27	AMIF	Input		AM IF input
28	SL	Input		Signal level input
29	ST	Input		Stereo signal input
30	VDD			
31	AMIN	Input		AM VCO input
32	FMIN	Input		FM VCO input
33	GND			
34, 35	Xout, in			
36, 37	E00, 1			
38-40				Not used
41	VDD			
42	BRST	Output	C	Bus reset
43, 44				Not used
45	LDT	Output	C	LCD driver data output
46	LCK	Output	C	LCD driver clock
47	LCE	Output	C	LCD driver CE
48	LINH	Output	C	LCD driver INH
49	VST	Output	C	E-VOL strobe
50	VDT	Output	C	E-VOL data
51	VCK	Output	C	E-VOL clock
52	LOUD	Output	C	Loudness
53	MS	Output	C	Music signal input
54	NR	Output	C	Dolby NR ON/OFF output
55	MTL	Output	C	Deck METAL(70 μS) output
56	MECPW	Output	C	Deck power supply control
57				Not used
58	ST-W	Output	C	Stereo wide
59	MONO	Output	C	Mono output
60	SEEK	Output	C	"L" output when SEEK
61	LW	Output	C	LW output
62	LOCL	Output	C	Local L
63	LOCH	Output	C	Local H
64	TUNANT	Output	C	Antenna output
65	FM/AM	Output	C	FM/AM switching
66	EQFDA	Output	C	1P, EQ Fc control
67	EQFDB	Output	C	1P, EQ Fc control
68	EQLDA	Output	C	1P, EQ level control
69	EQLDB	Output	C	1P, EQ level control
70	EQINH	Output	C	1P, EQ INH
71	ILLMG	Output	C	Green illumination light output
72	ILLMA	Output	C	Amber illumination light output
73	KS1	Output	C	Model sense output
74	KS0	Output	C	Model sense output
75-78	K3-K0	Input		Key matrix input
79, 80				Not used

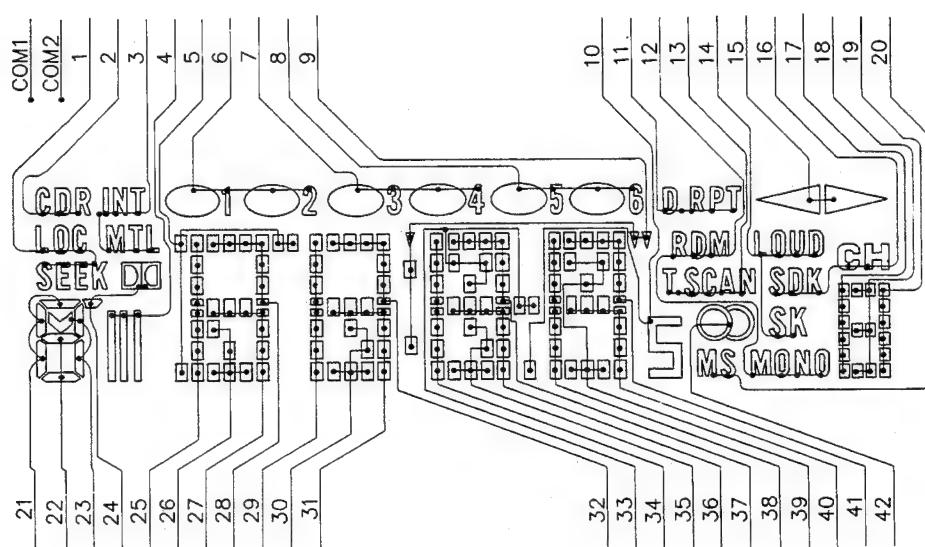
Output Format	Meaning
C	CMOS Output
N	N channel open drain

## •LCD (CAW1124)

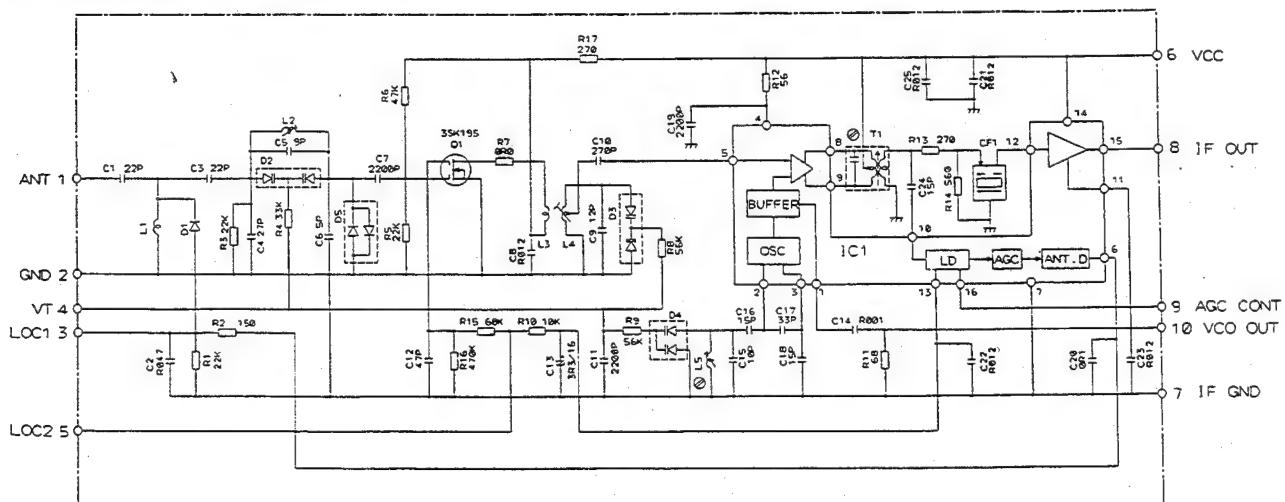
COMMON



SEGMENT



## •FM FRONT END (CWB1035)



## NOTE :

— Symbol indicates a resistor.  
No differentiation is made between chip resistors and discrete resistors.

— Symbol indicates a capacitor.  
No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as:  
2.2—R222

0.022—R022

1

2

3

4

5

6

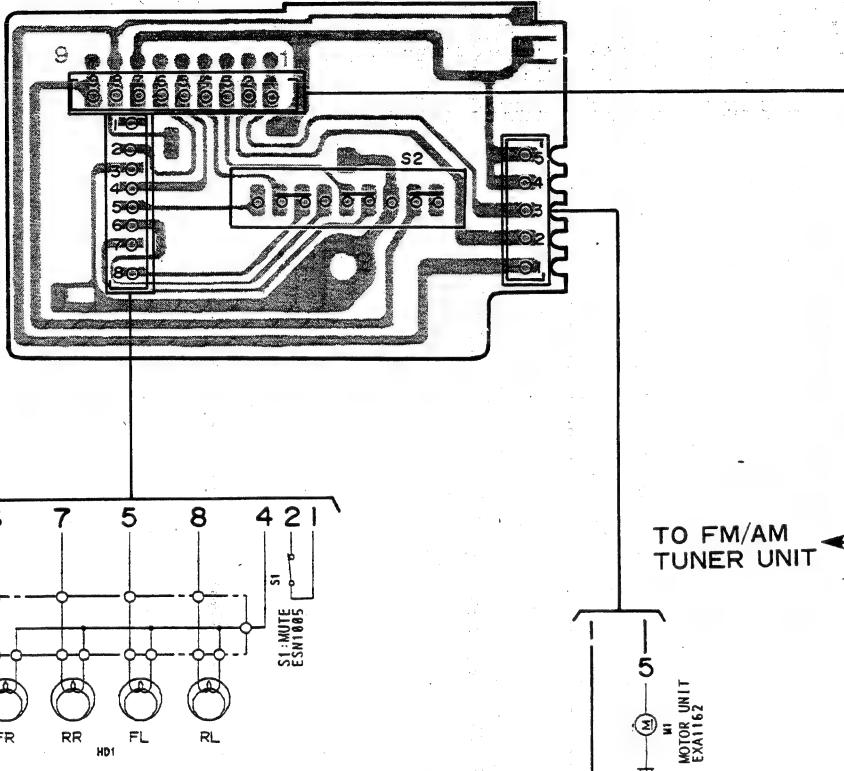
## **9. CONNECTION DIAGRAM (KEH-M7250/ES)**

## **TUNER AMP P.C. BOARD**

Q951 Q950 Q451      Q350      Q952 IC451 Q462 Q954 Q352 Q351 Q458 Q457      Q960      Q974 Q975 Q969 Q963 Q551 IC501  
 Q953 Q452 IC352      IC350      IC351      Q456 Q976 Q460 Q459 Q959 Q962 Q961 Q965 Q964 Q550 Q552 Q553 Q554  
 IC,Q Q510 Q502 Q501 Q504 Q505      Q503 Q455 IC502 Q509 Q958 Q957 Q956 Q955 IC951      Q966 Q973 Q972 Q971 Q977 Q979 Q918 Q980 Q978

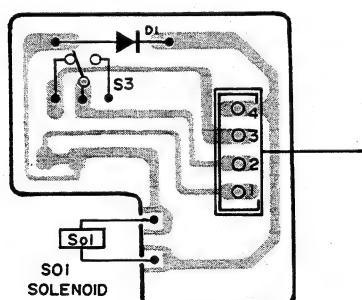
A

P.C. BOARD(A)

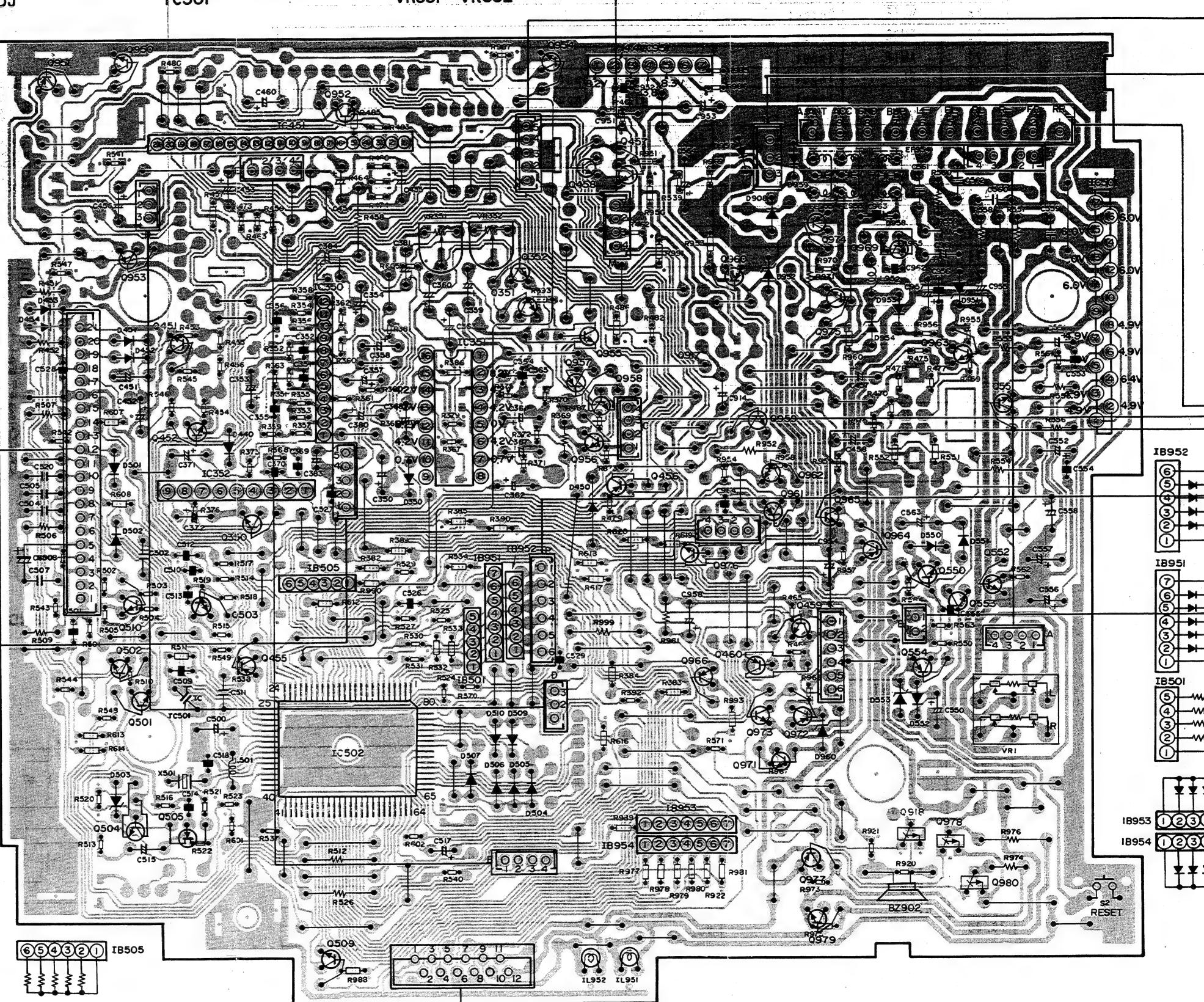


C

P.C. BOARD(B)



D



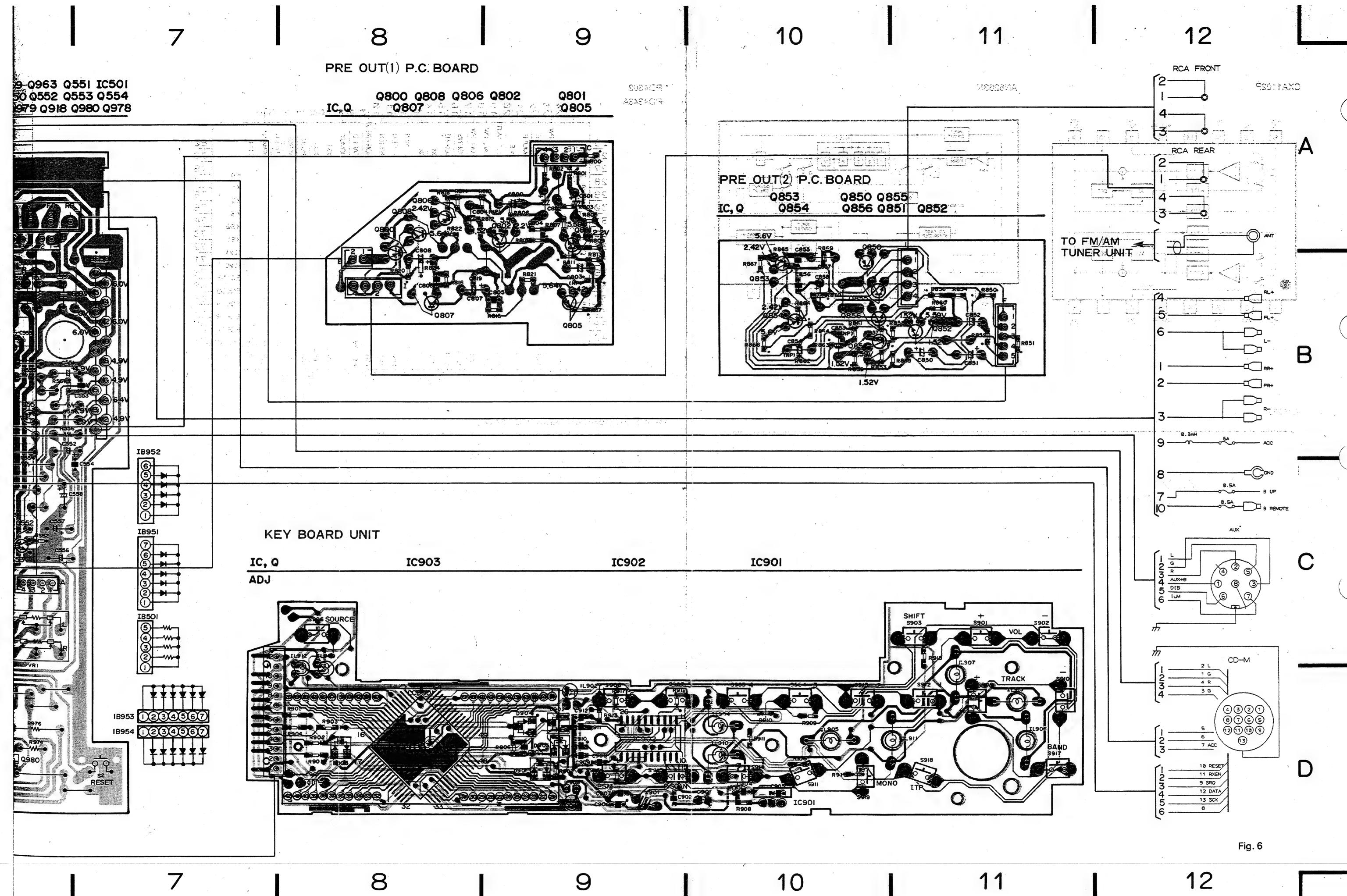


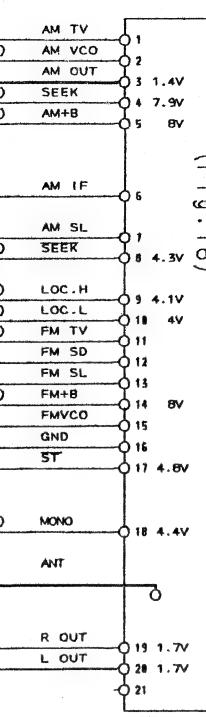
Fig. 6

# 10. SCHEMATIC CIRCUIT DIAGRAM (KEH-M7250/ES)

TO TUNER AMP P.C. BOARD

TUNER AMP P.C. BOARD  
(Fig. 16)

FM/AM TUNER UNIT

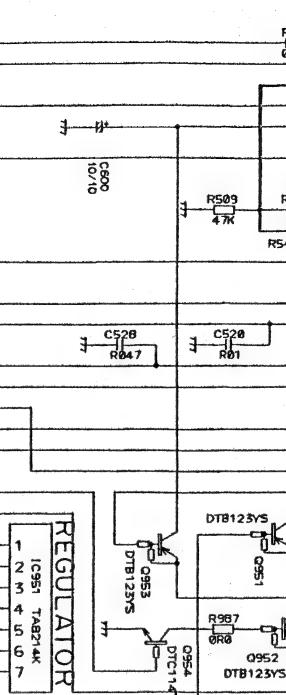


TEST TAPE 315Hz Odb P.C. BOARD (B)

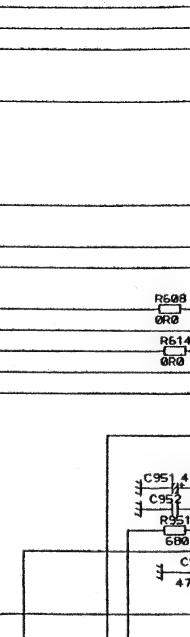
HEAD UNIT: EXA163  
SOLENOID: EXA106  
MOTOR UNIT: EXA1162

S3: TAPE/TUN ESH1004

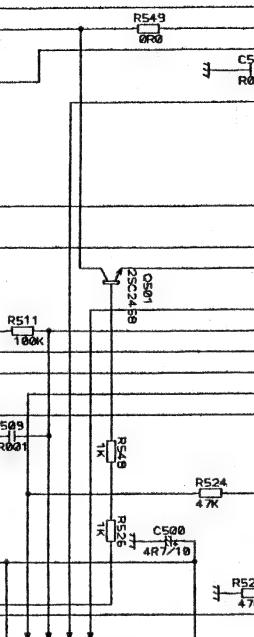
B



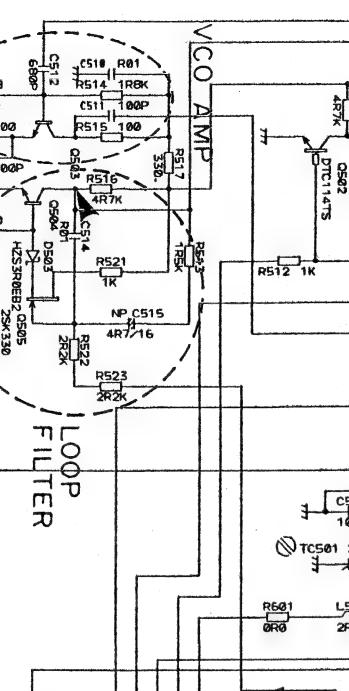
C



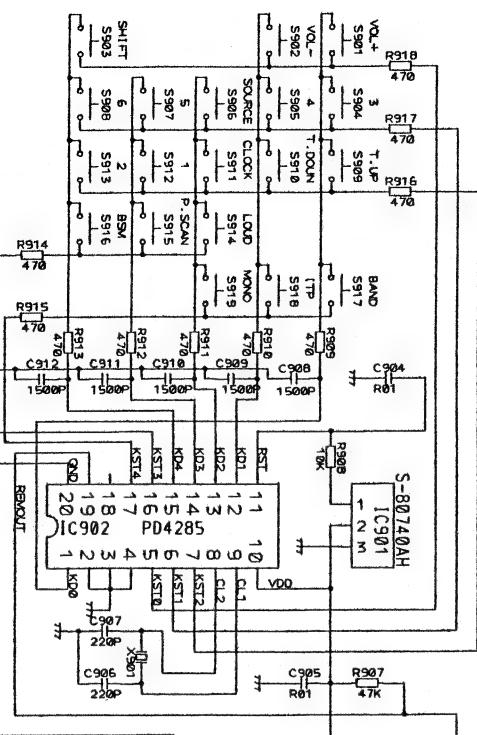
D



E



F



KEY BOARD UNIT

1

2

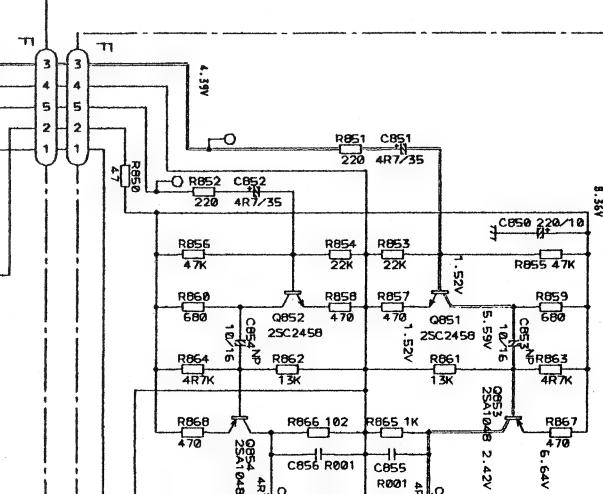
3

4

PRE OUT (2) P.C. BOARD

N/R Rch Lch GND MUTE MECHA SOL LOAD ACC

P.C. BOARD (A)



B

C

D

E

F

G

H

I

J

K

L

M

N

O

P

Q

R

S

T

U

V

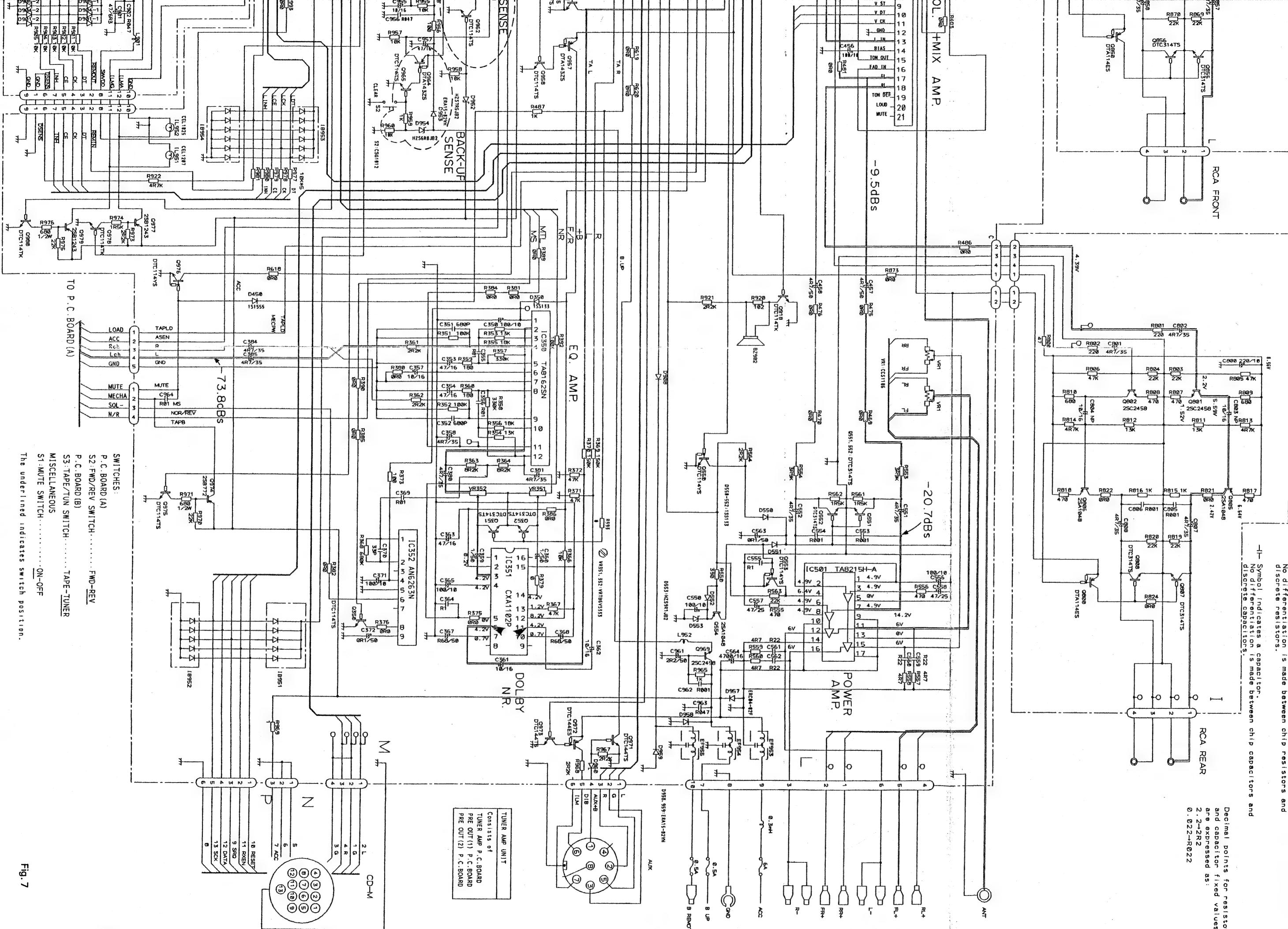
W

X

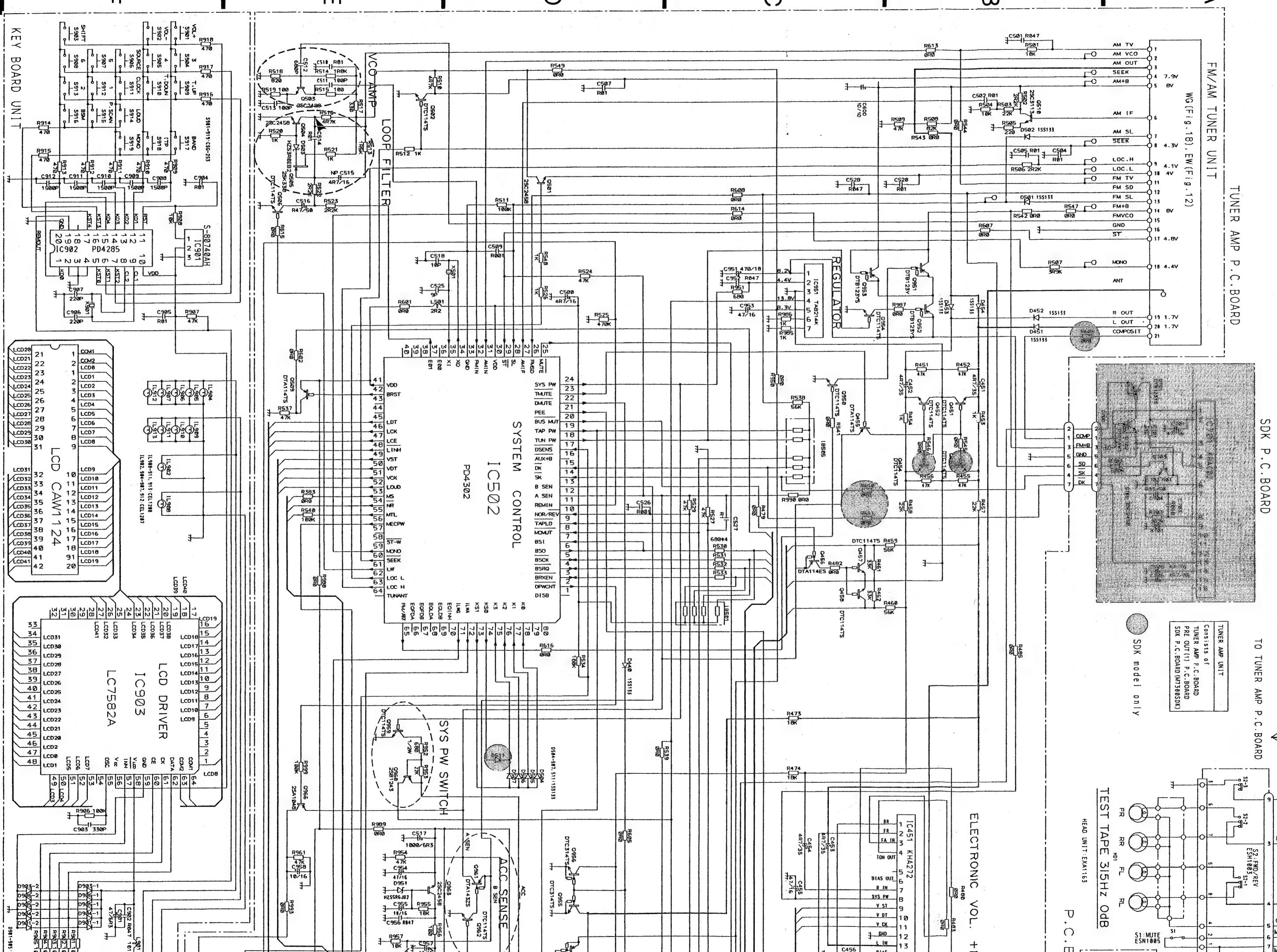
Y

Z





# 11. SCHEMATIC CIRCUIT DIAGRAM (KEH-M7300/EW, M7300SDK/WG)





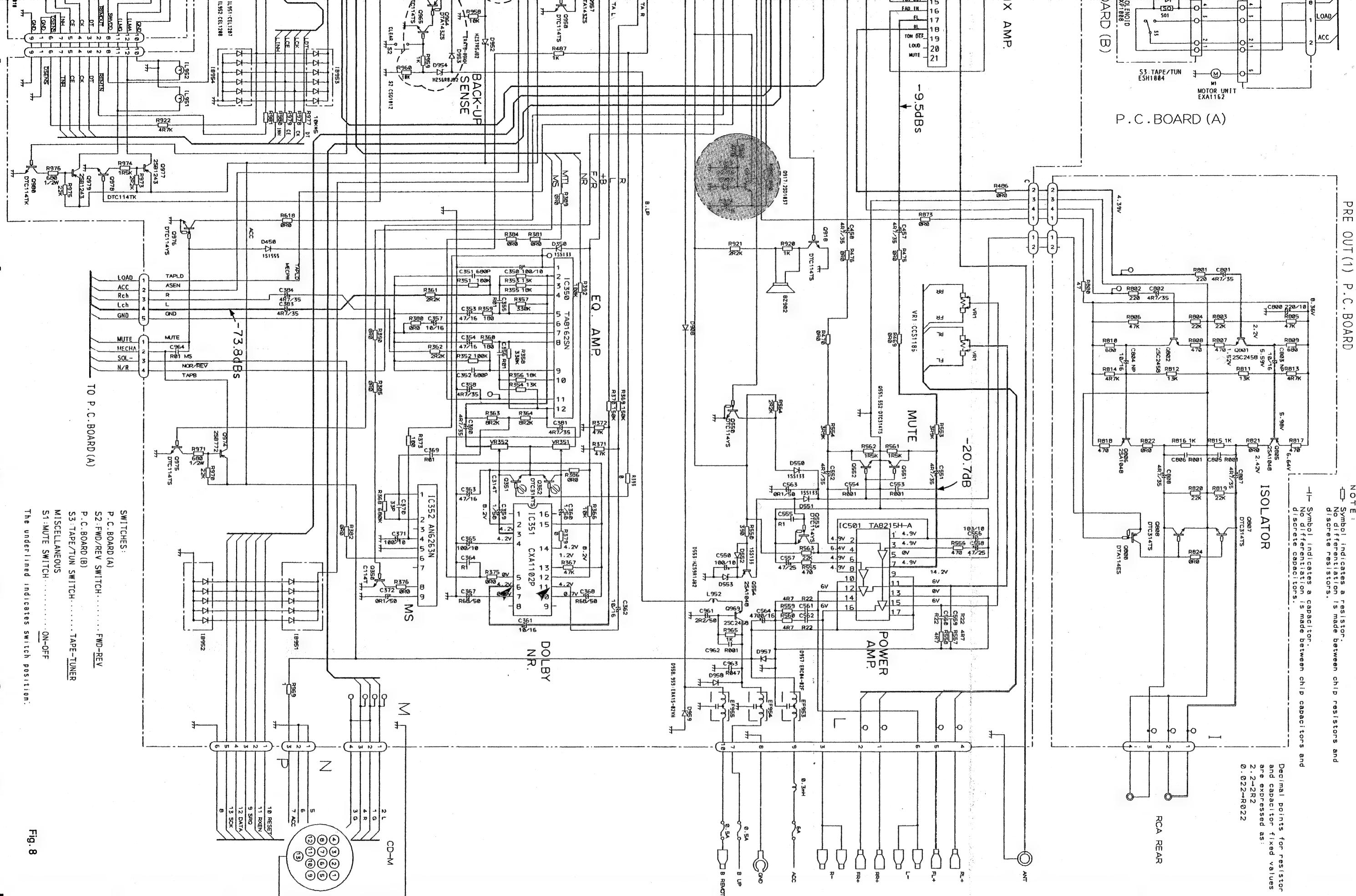


Fig. 8

## 12. CONNECTION DIAGRAM (KEH-M7300/EW, M7300SDK/WG)

TUNER AMP P.C. BOARD

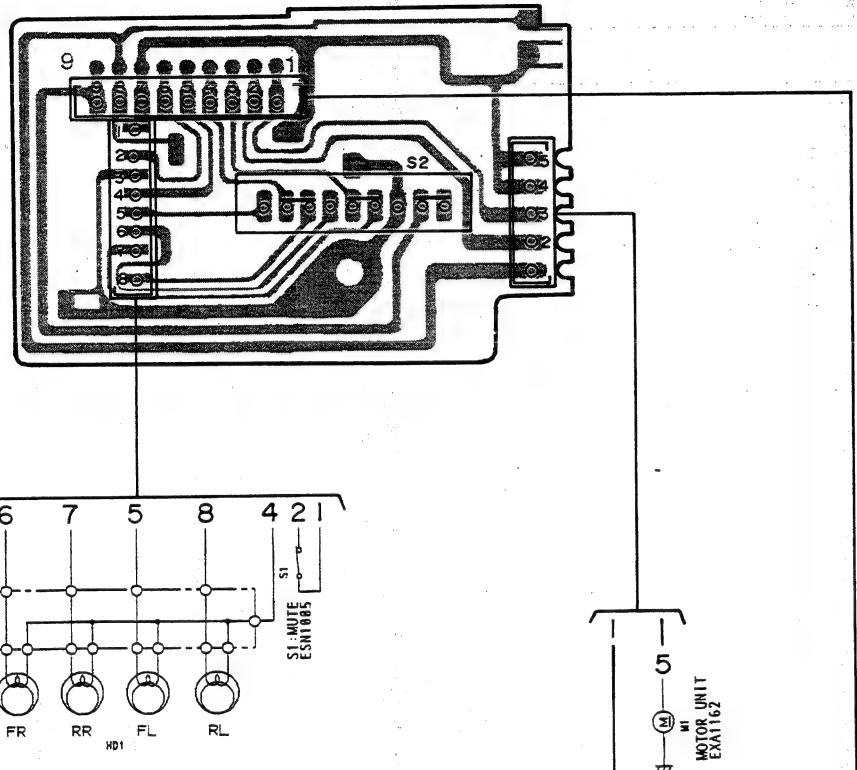
Q951 Q950 Q451 Q453 Q454 Q350	Q952 IC451	Q954 Q352 Q351 Q458 Q457	Q960	Q974 Q975 Q969 Q963 Q551 IC501
Q953 Q452 IC352	IC350 IC351	Q456 Q976 Q460	Q959 Q962 Q961 Q965 Q964 Q550 Q552 Q553 Q554	Q977 Q979 Q918 Q980 Q978
IC,Q Q510 Q502 Q501 Q504 Q505 Q506	Q503 Q455 IC502 Q509	Q958 Q957 Q956 Q955 IC951	Q966	

ADJ

VR351 VR352

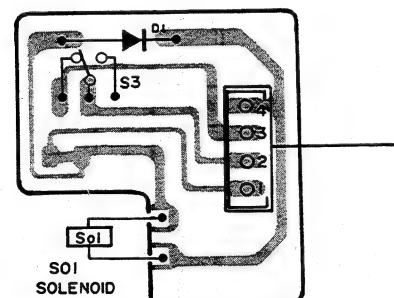
A

P.C. BOARD(A)

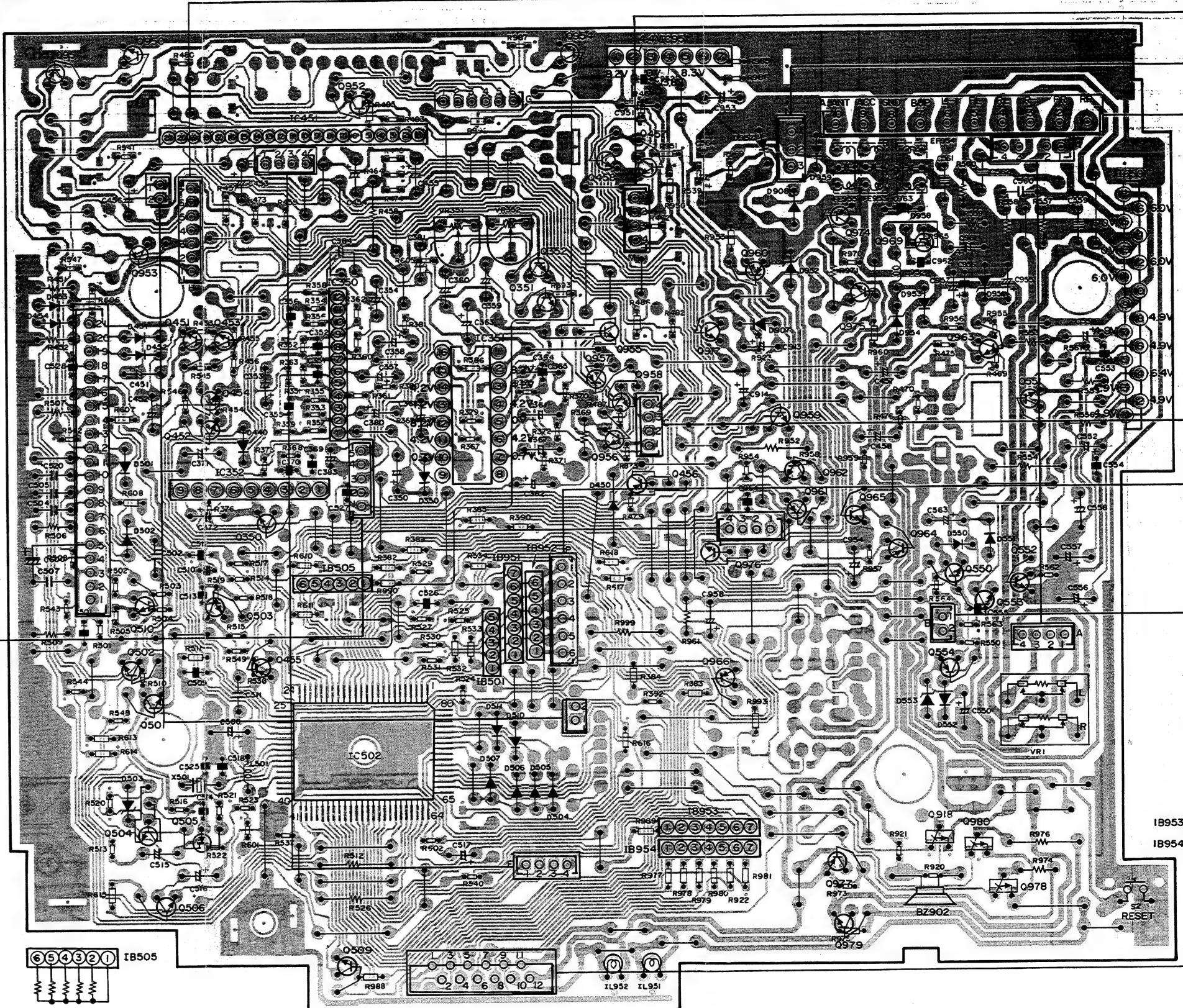


B

P.C. BOARD(B)



C



7

8

9

1

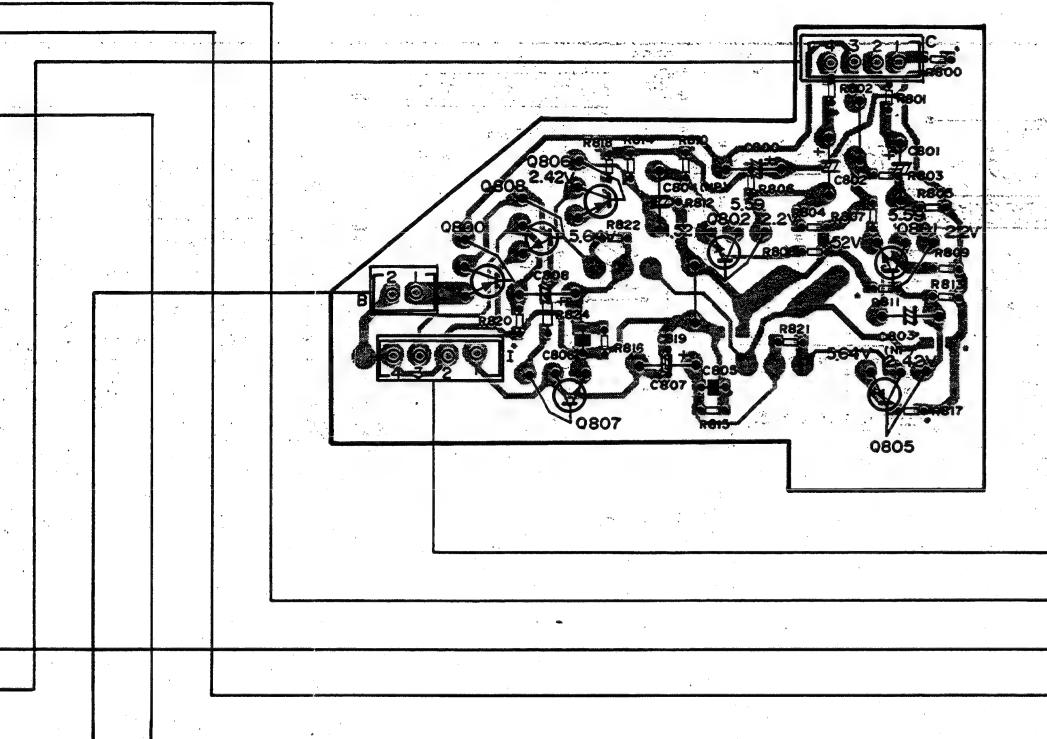
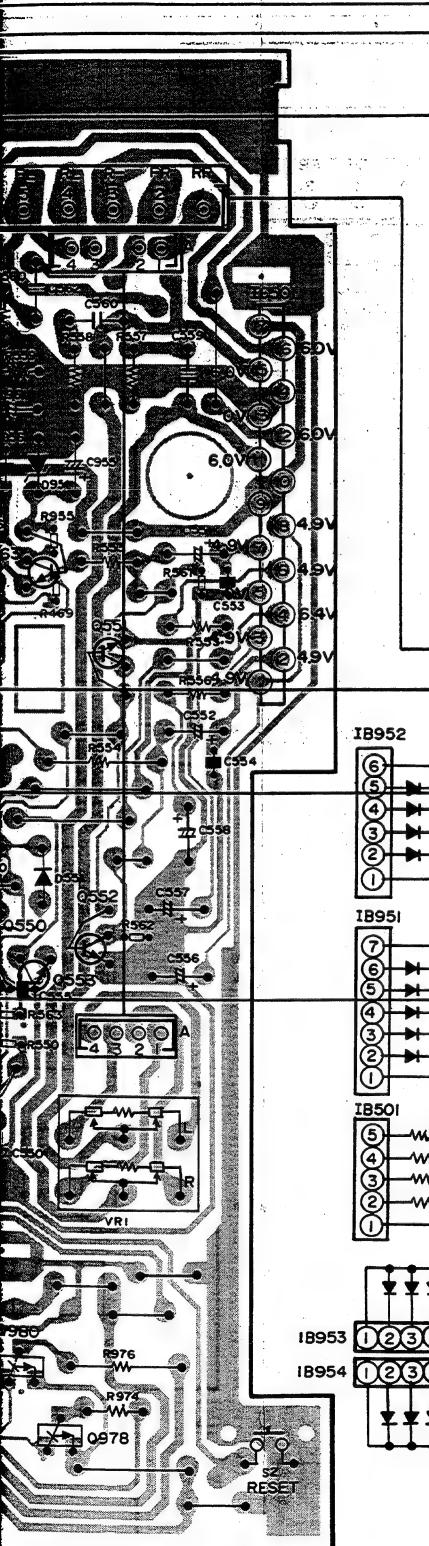
1

12

PRE OUT(1) P.C. BOAR

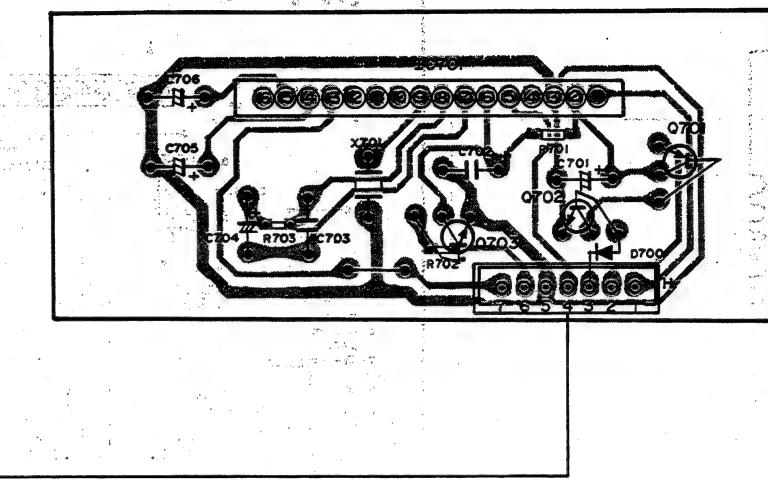
5 Q969 Q963 Q551 IC501  
64 Q550 Q552 Q553 Q554  
977 Q979 Q918 Q980 Q978

**Q800 Q808 Q806 Q802 Q80  
IC, Q Q807**



SDK P.C. BOARD

**IC, Q**      **IC701**      **Q703**      **Q702**      **Q70**



IC, Q  
ADJ

IC903

IC90

IC90

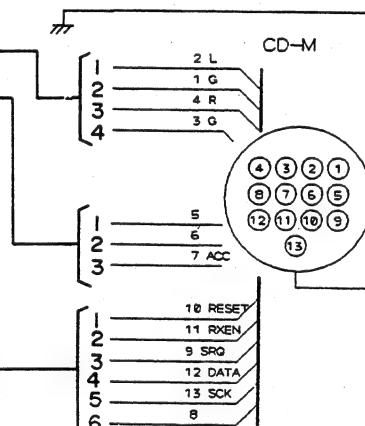
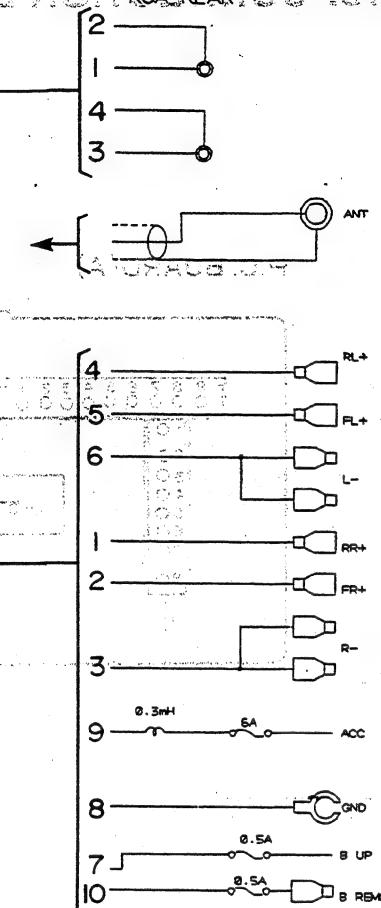
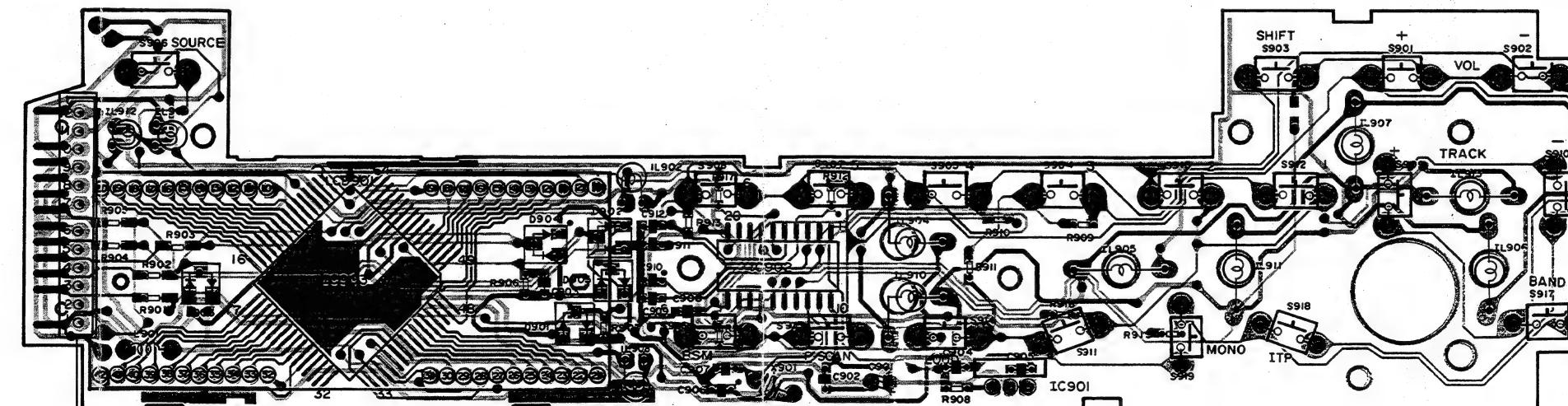


Fig. 9

7

8

C

1

1

12

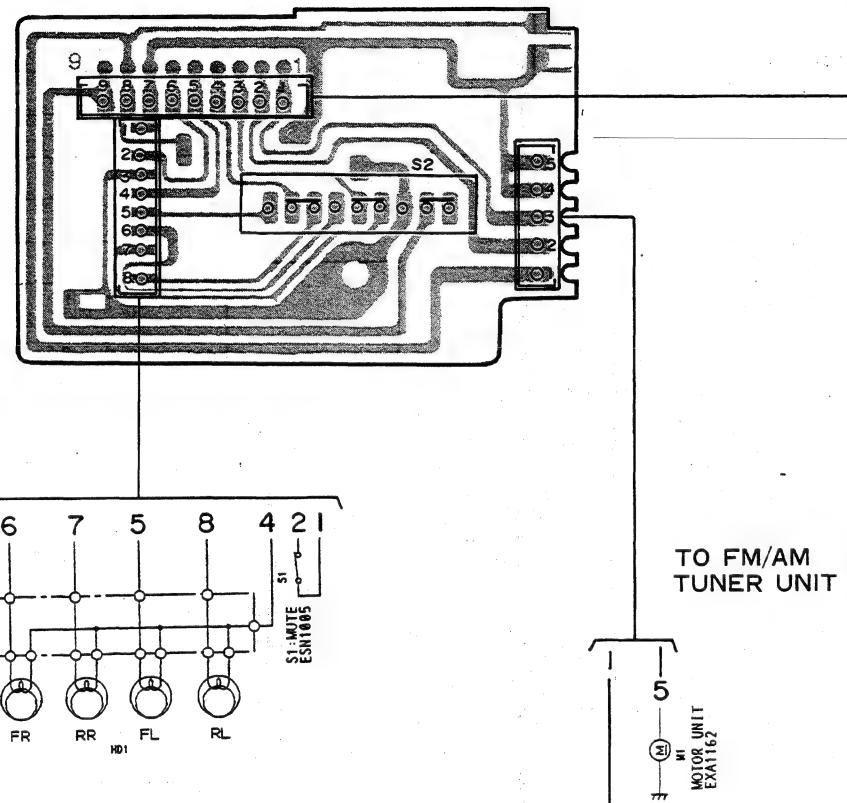
## 13. CONNECTION DIAGRAM (KEH-M7200, M550, M7250)

TUNER AMP P.C. BOARD

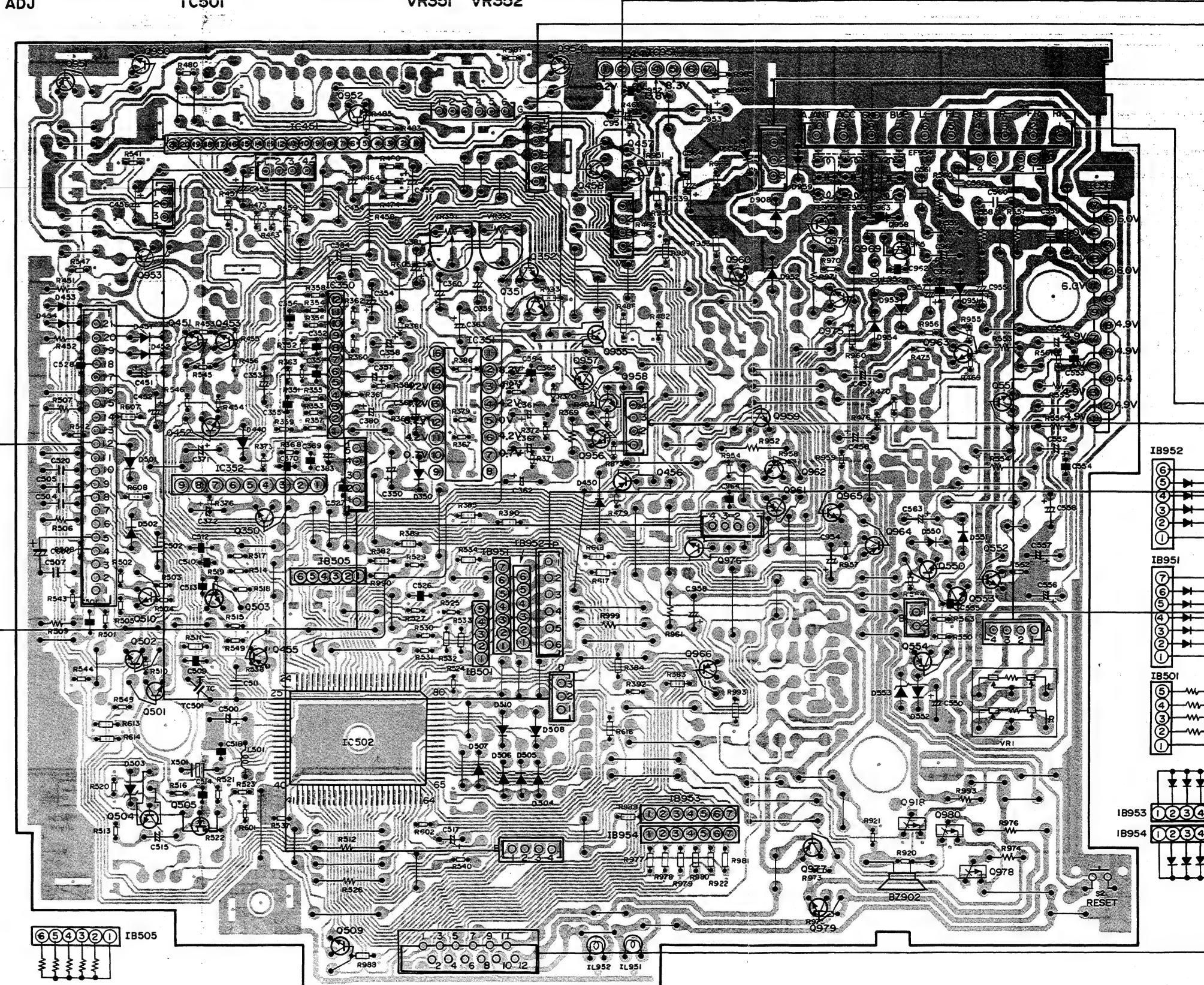
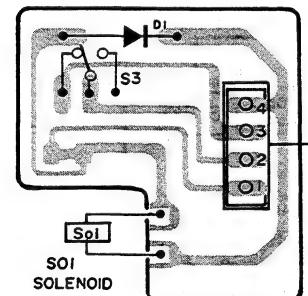
Q951 Q950 Q451 Q453 Q454 Q350 Q953 Q452 IC352 IC,Q Q510 Q502 Q501 Q504 Q505	Q952 IC451 IC350 IC351 Q503 Q455 IC502 Q509 Q958 Q957 Q956 Q955 IC951	Q954 Q352 Q351 Q458 Q457 Q456 Q976 Q503 Q455 IC502 Q509 Q958 Q957 Q956 Q955 IC951	Q960 Q974 Q975 Q969 Q963 Q551 IC501 Q959 Q962 Q961 Q965 Q964 Q550 Q552 Q553 Q554 Q966 Q977 Q979 Q918 Q980 Q978
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ADJ TC501 VR351 VR352

P.C. BOARD(A)



P.C. BOARD(B)



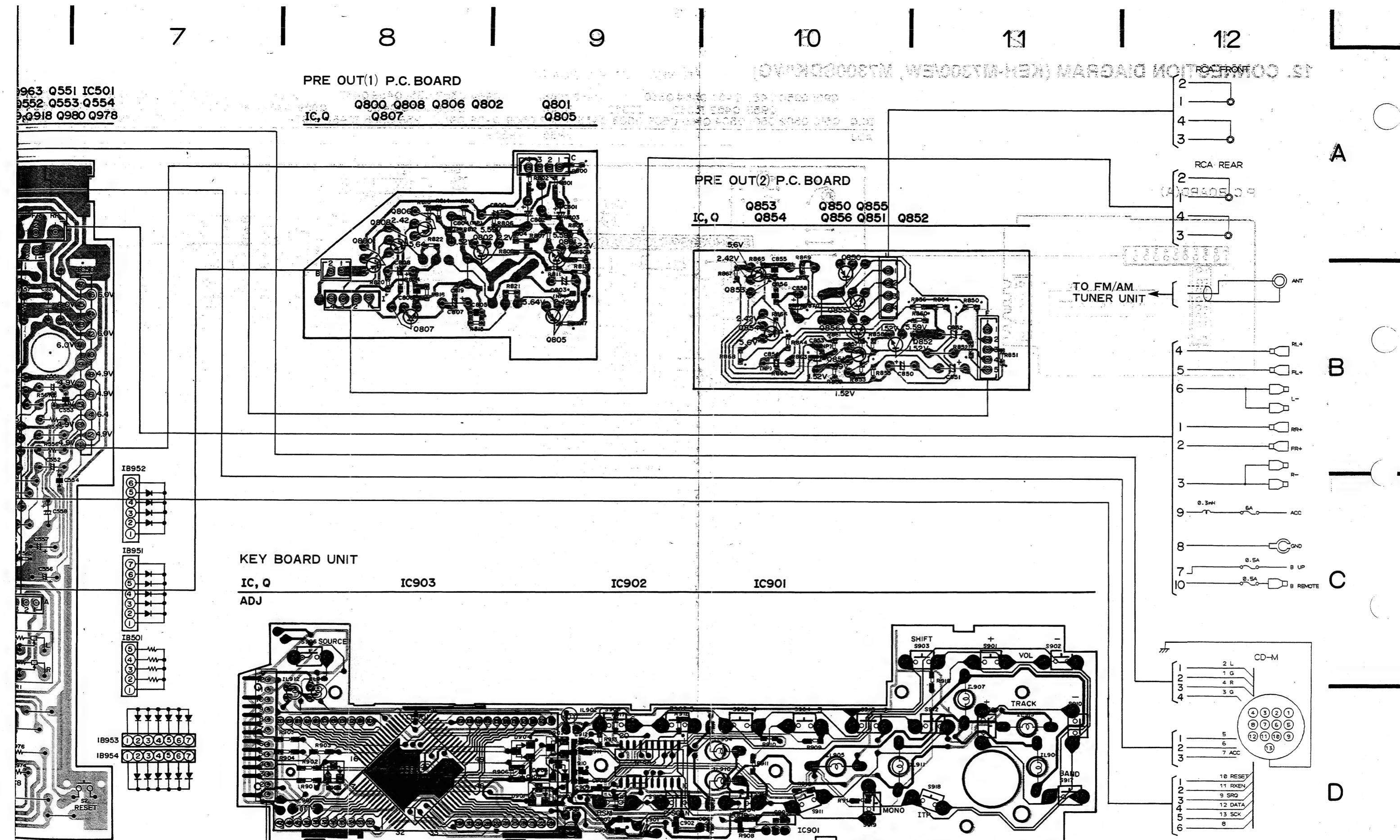
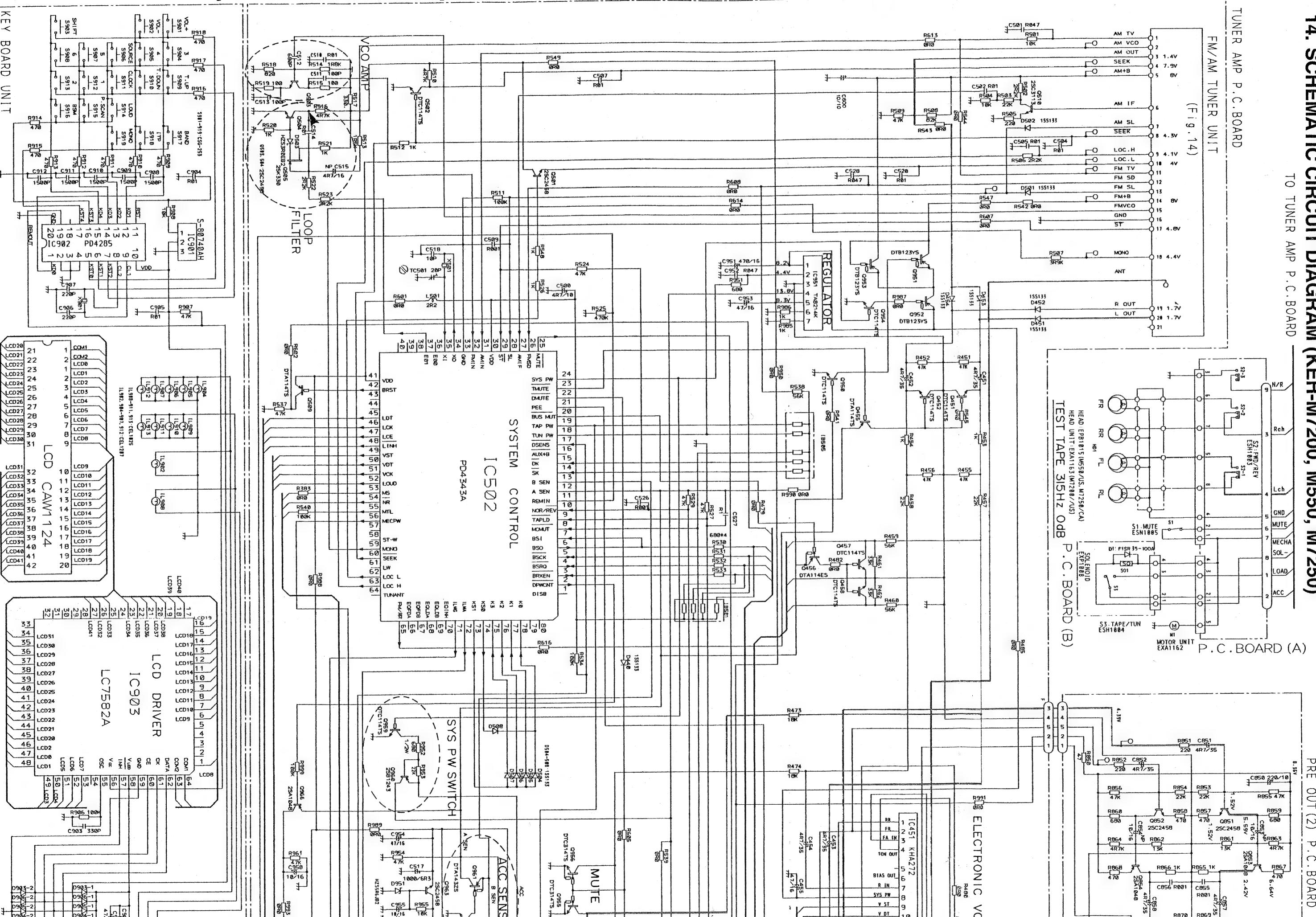


Fig. 10

## 14. SCHEMATIC CIRCUIT DIAGRAM (KEH-M7200, M550, M7250)

PRE OUT (2) P. C. BOARD



4

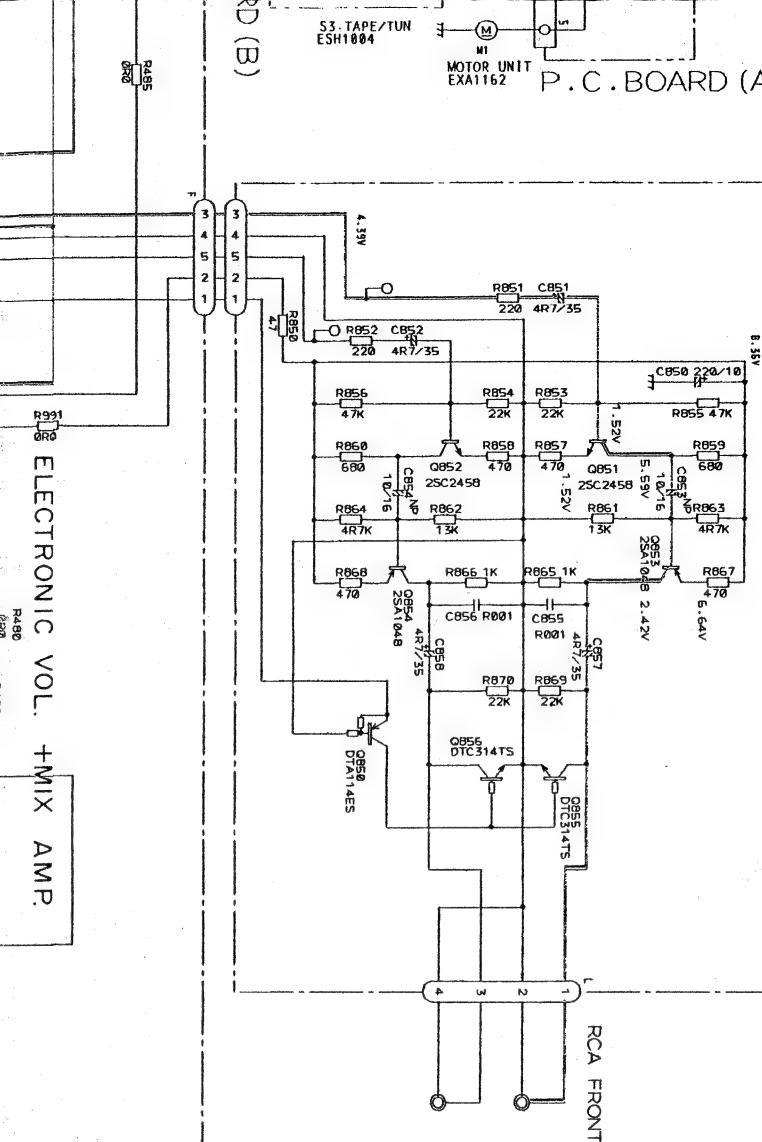
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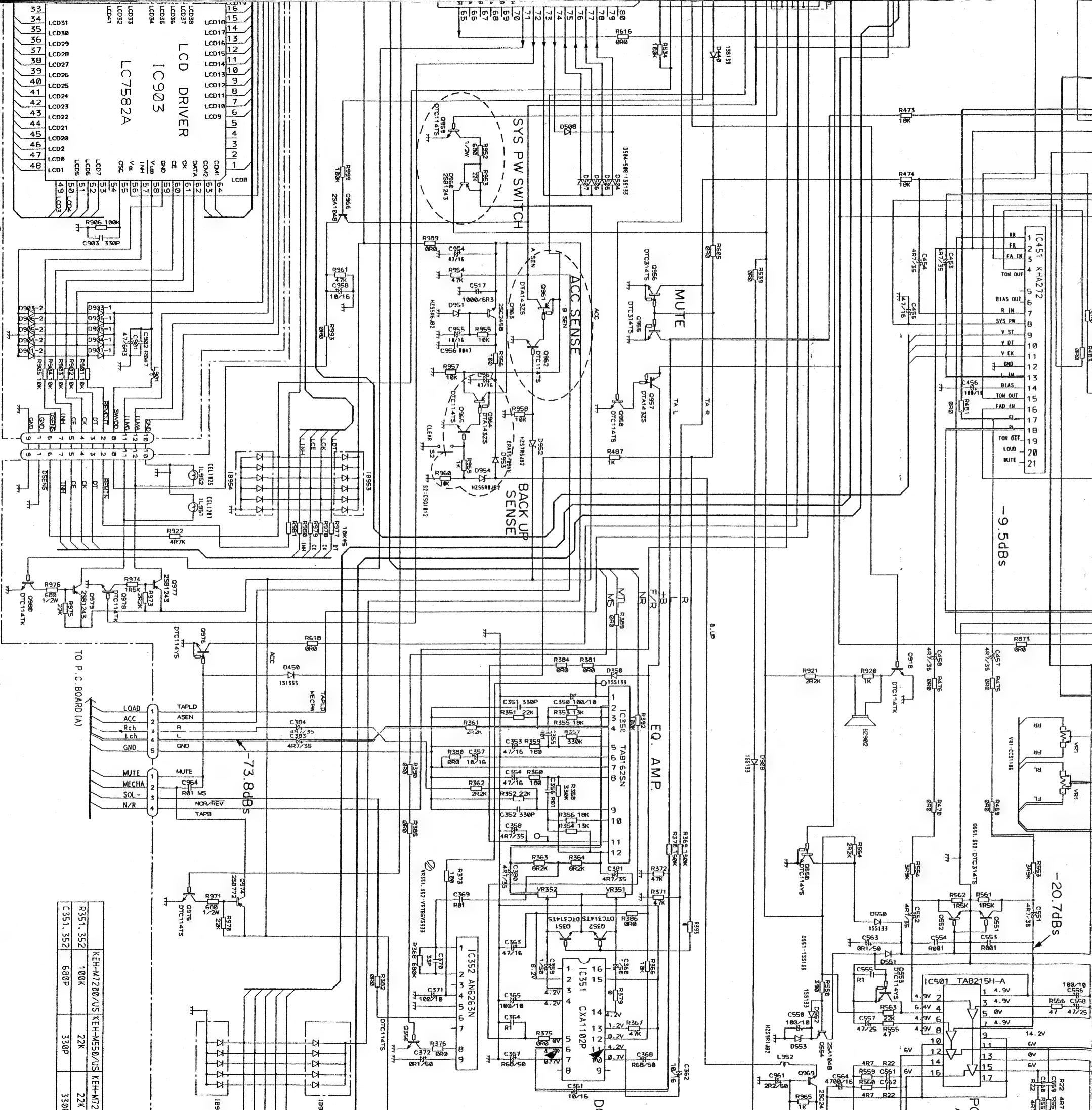
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8

P.R.E. OUT (2) P.C. BOARD



P.R.E. OUT (1) P.C. BOARD



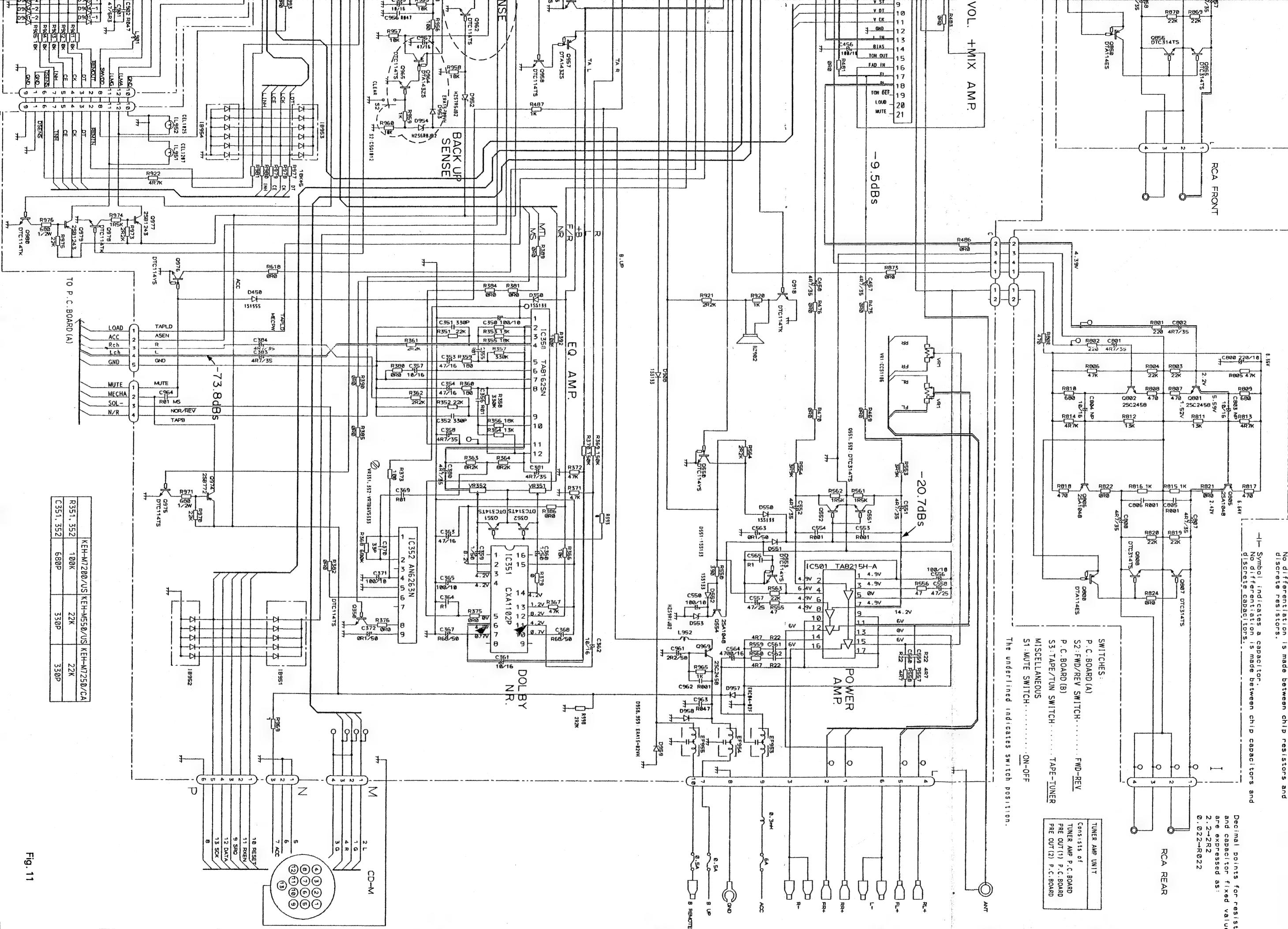
NOTE: Symbol indicates a resistor. No difference is made between discrete resistors.

Symbol indicates a capacitor. No difference is made between discrete capacitors.

**SWITCHES:**  
P.C. BOARD (A)  
S2: FWD/REV SW  
P.C. BOARD (B)  
S3: TAPE/TUN SW  
**MISCELLANEOUS:**  
S1: MUTE SWITCH  
The underlined

Symbol indicates a resistor. No difference is made between discrete resistors.

Symbol indicates a capacitor. No difference is made between discrete capacitors.



SWITCHES:  
P.C. BOARD (A)  
S2: FWD/REV SWITCH.....FWD-REV  
P.C. BOARD (B)  
S3: TAPE/TUNER SWITCH.....TAPE-TUNER

MISCELLANEOUS:  
S1: MUTE SWITCH.....ON-OFF

The underlined indicates switch position.

Fig. 11

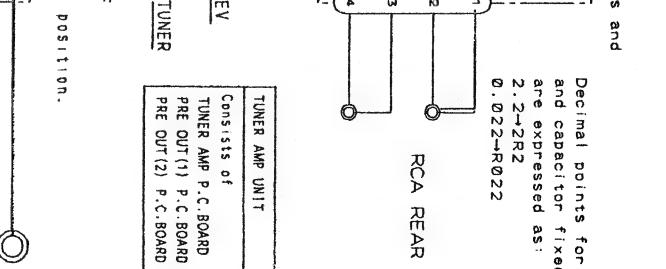
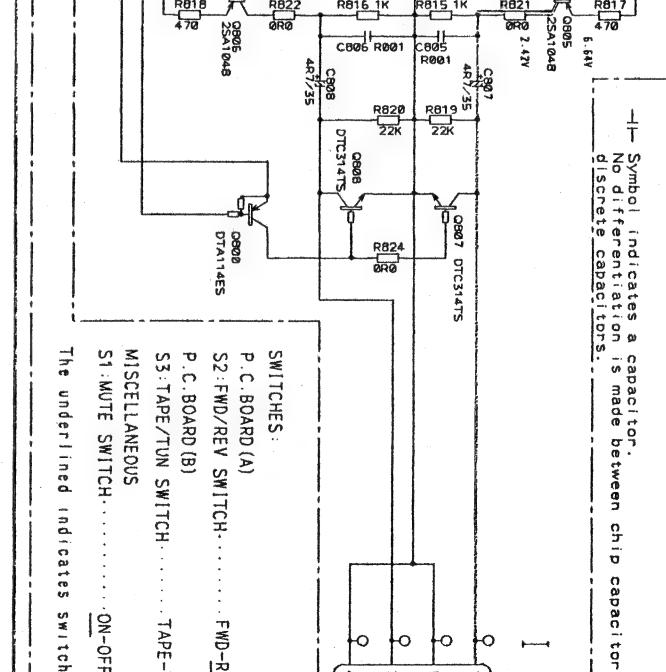
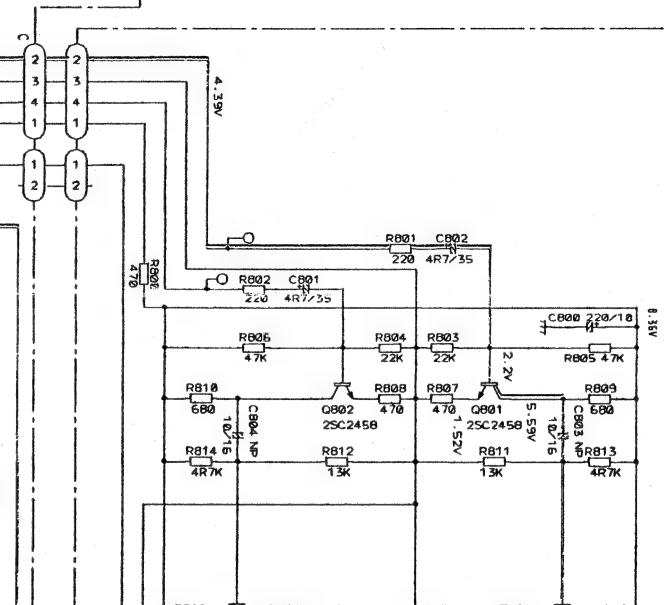
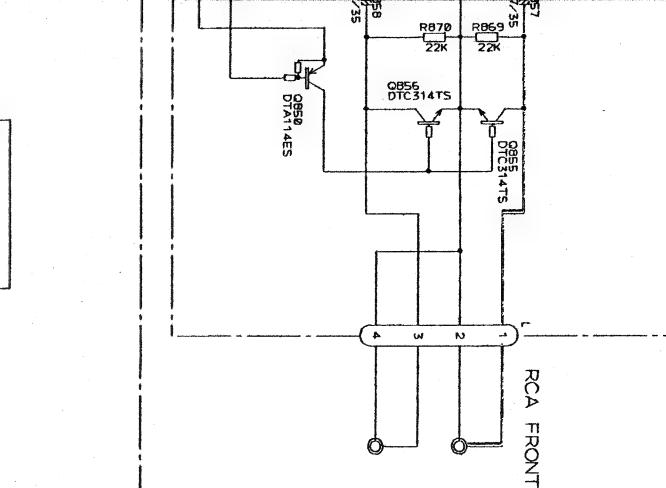
## PRE OUT (1) P.C. BOARD

NOTE : Symbol indicates a resistor is made between chip capacitors and no differentiation is made between chip resistors and discrete resistors.

Decimal points for resistor and capacitor fixed values are expressed as: 2.2→R2.2

2.2→R2.2

0.022→R022



## 15. CIRCUIT DIAGRAM AND PATTERN

### 15.1 FM/AM TUNER UNIT (KEH-M7300/EW)

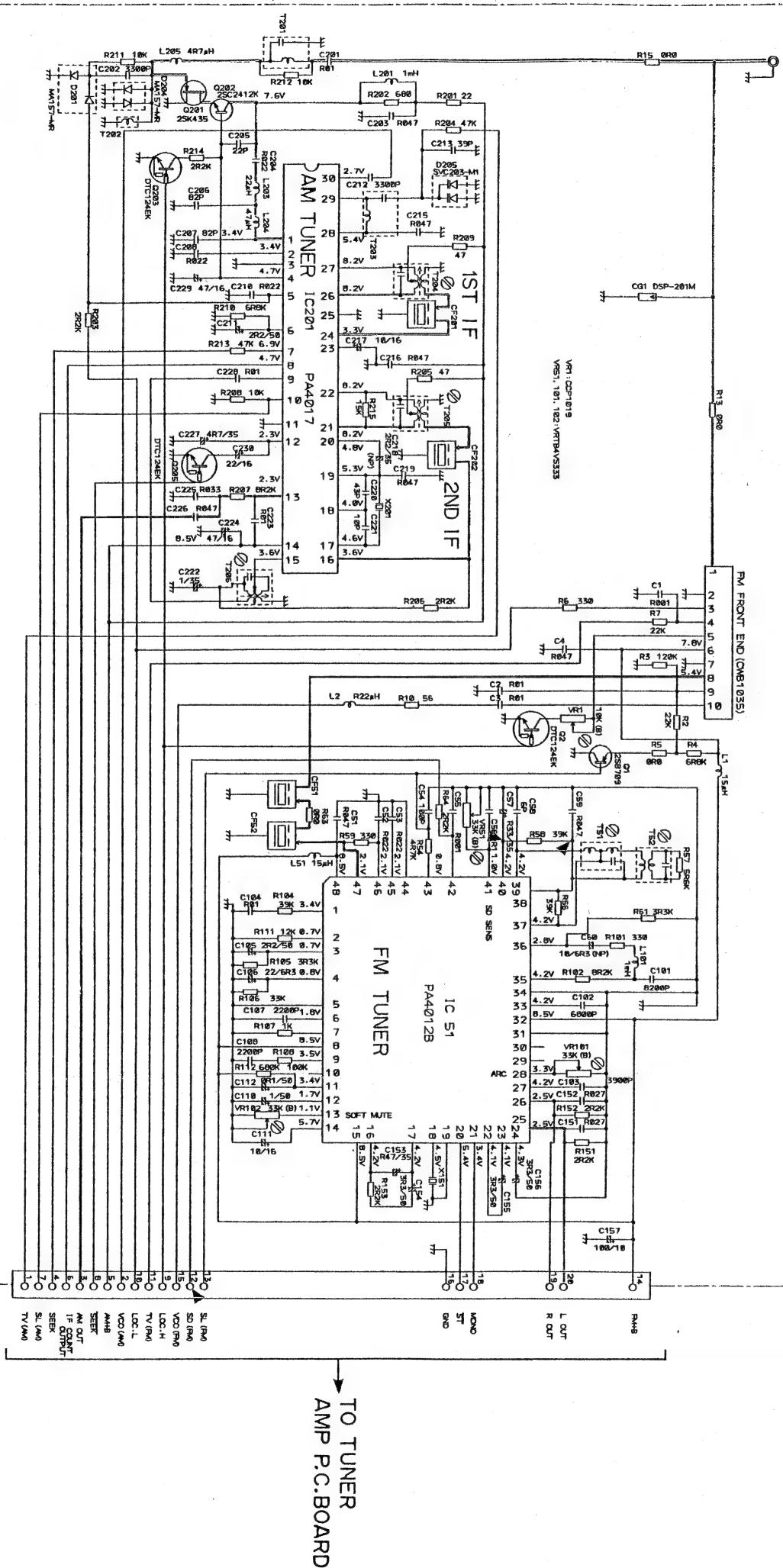
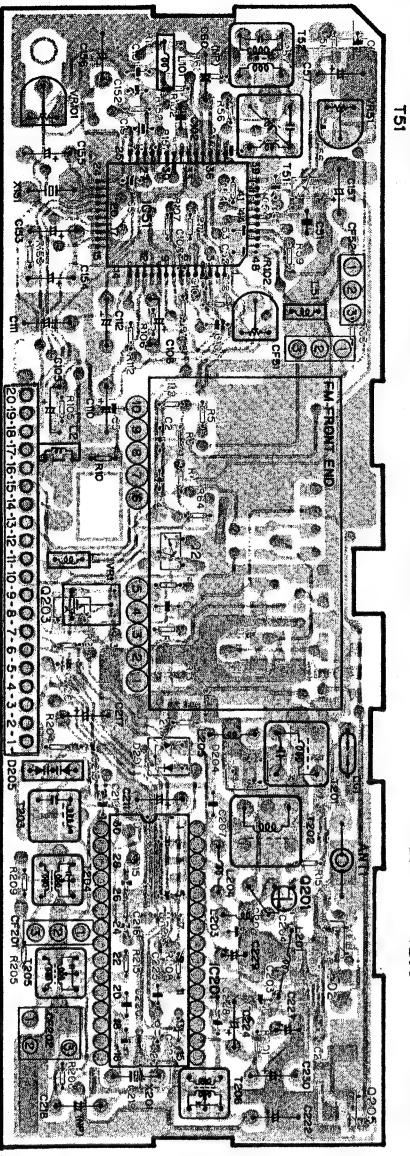


Fig. 12



TO TUNER AMP P.C.BOARD

Fig. 13

## 15.2 FM/AM TUNER UNIT (KEH-M7200/US, M550/US, M7250/CA)

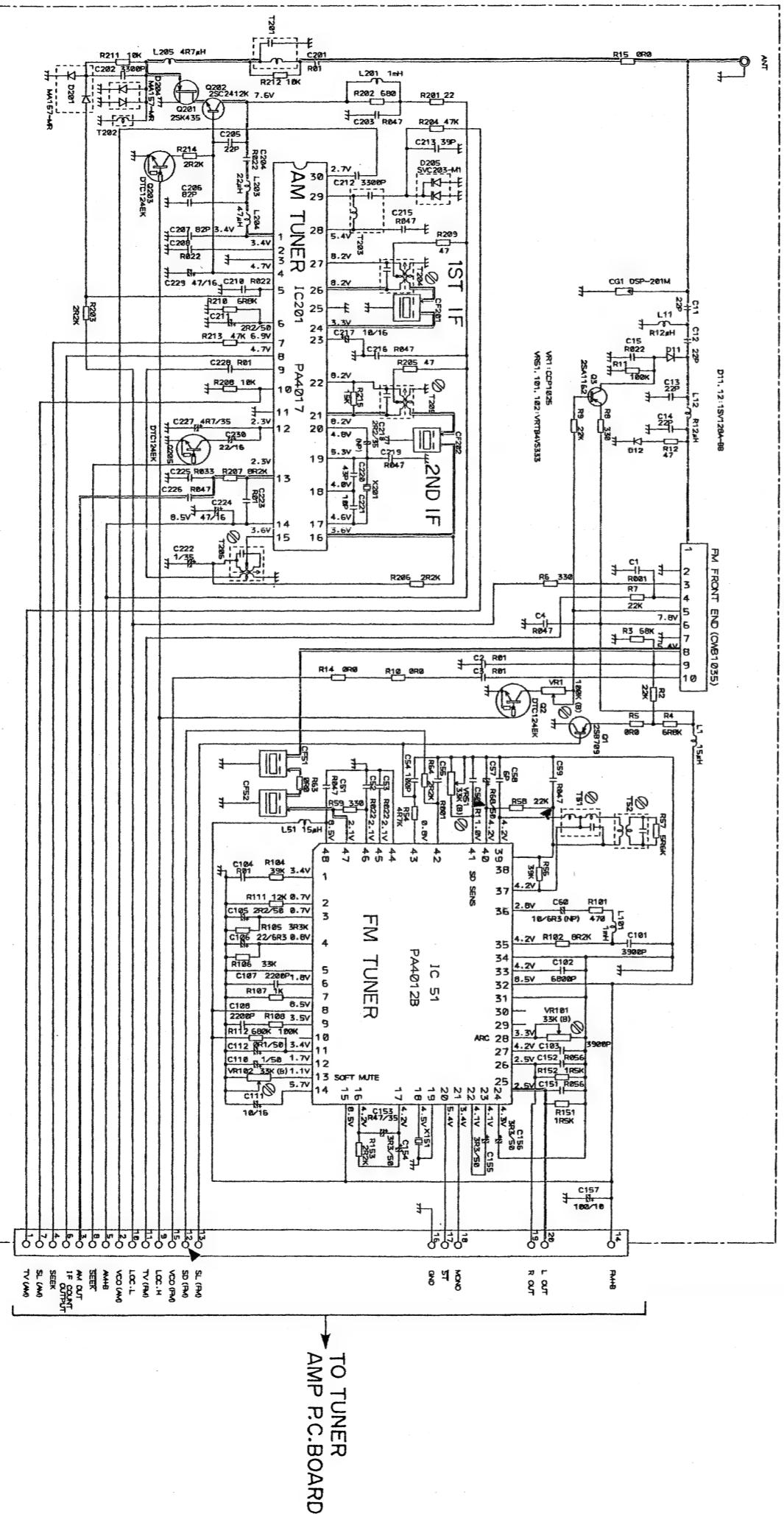


Fig. 14

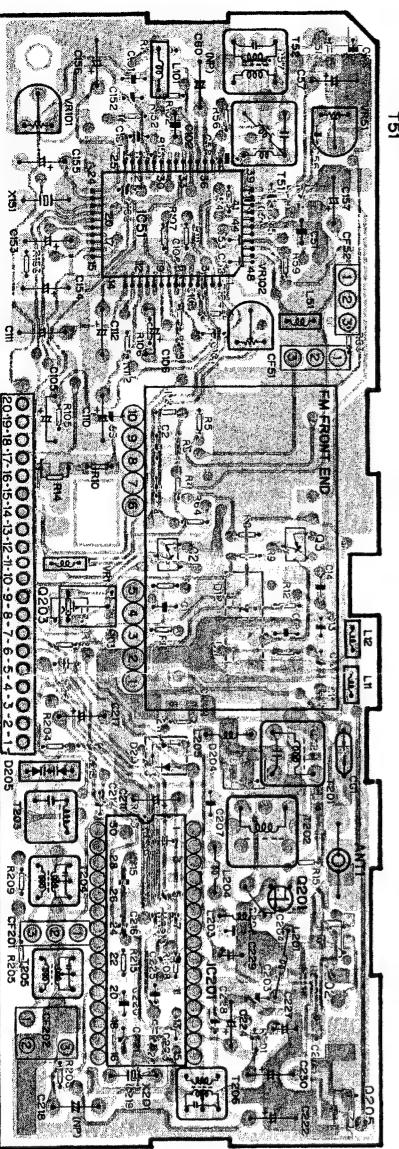
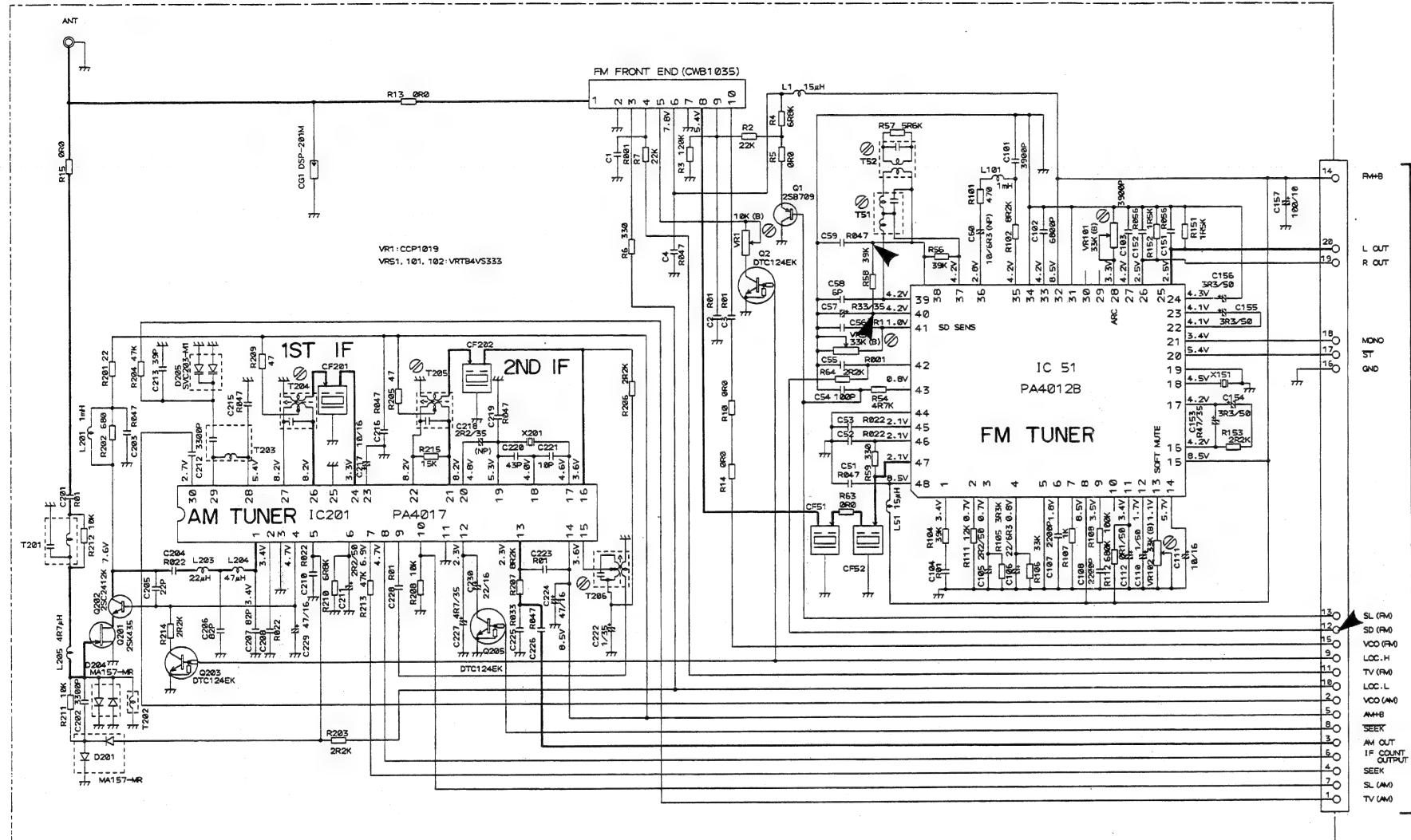


Fig. 15

### 15.3 FM/AM TUNER UNIT (KEH-M7250/ES)



TO TUNER  
AMP P.C. BOARD

Fig. 16

**NOTE :**  
— Symbol indicates a resistor.  
No differentiation is made between chip resistors and discrete resistors.

Decimal points for resistor and capacitor fixed values are expressed as:  
2.2—R2  
0.022—R022

—II— Symbol indicates a capacitor.  
No differentiation is made between chip capacitors and discrete capacitors.

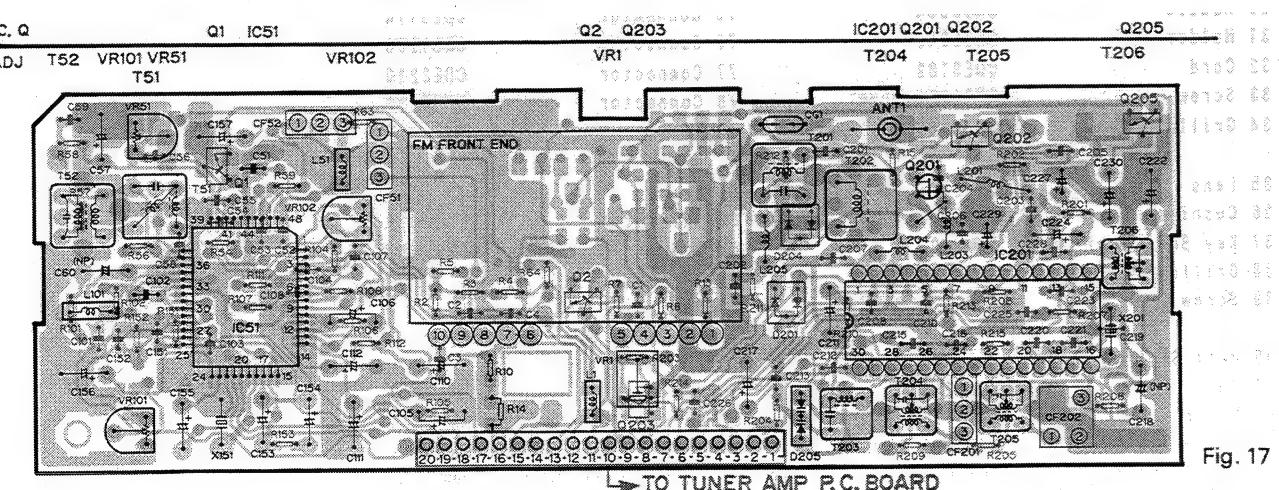
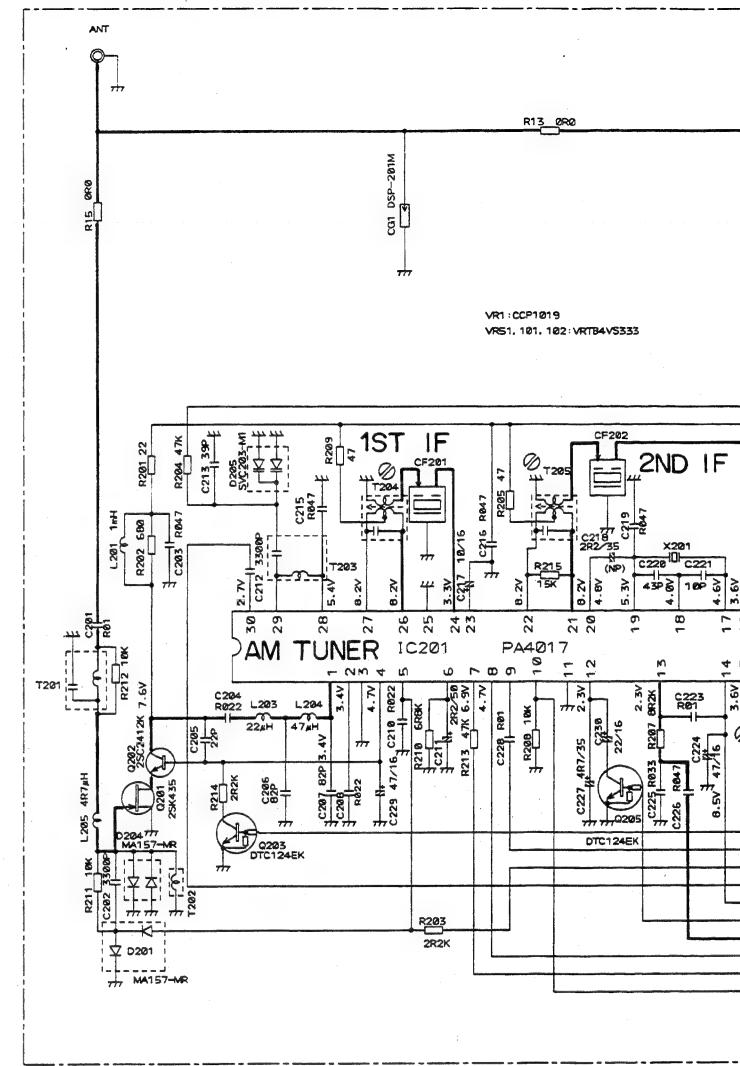


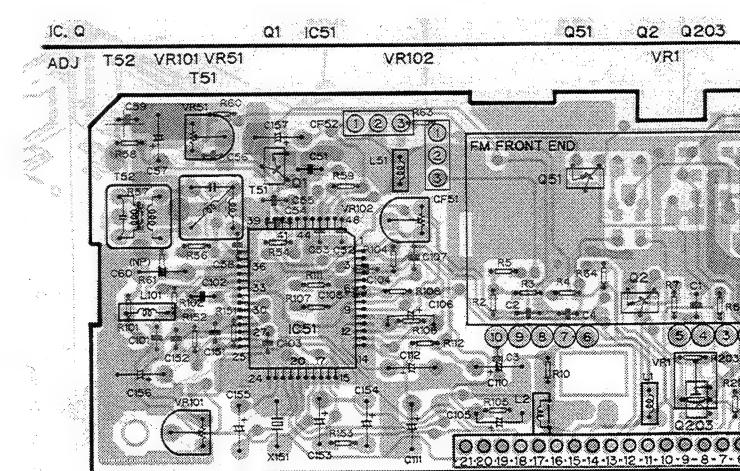
Fig. 17

### 15.4 FM/AM TUNER UNIT (KEH-M7300SDK/WG)



**NOTE :**  
— Symbol indicates a resistor.  
No differentiation is made between chip resistors and discrete resistors.

—II— Symbol indicates a capacitor.  
No differentiation is made between chip capacitors and discrete capacitors.



#### **15.4 FM/AM TUNER UNIT (KEH-M7300SDK/WG)**

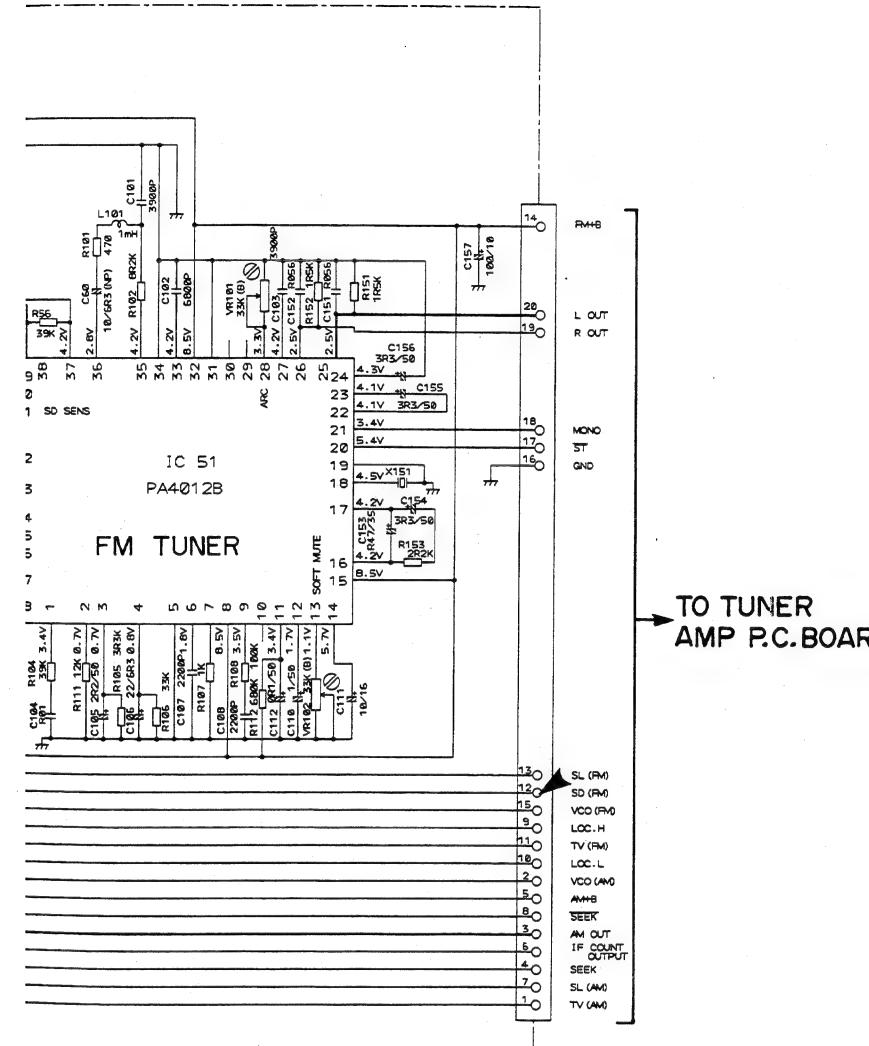


Fig. 16

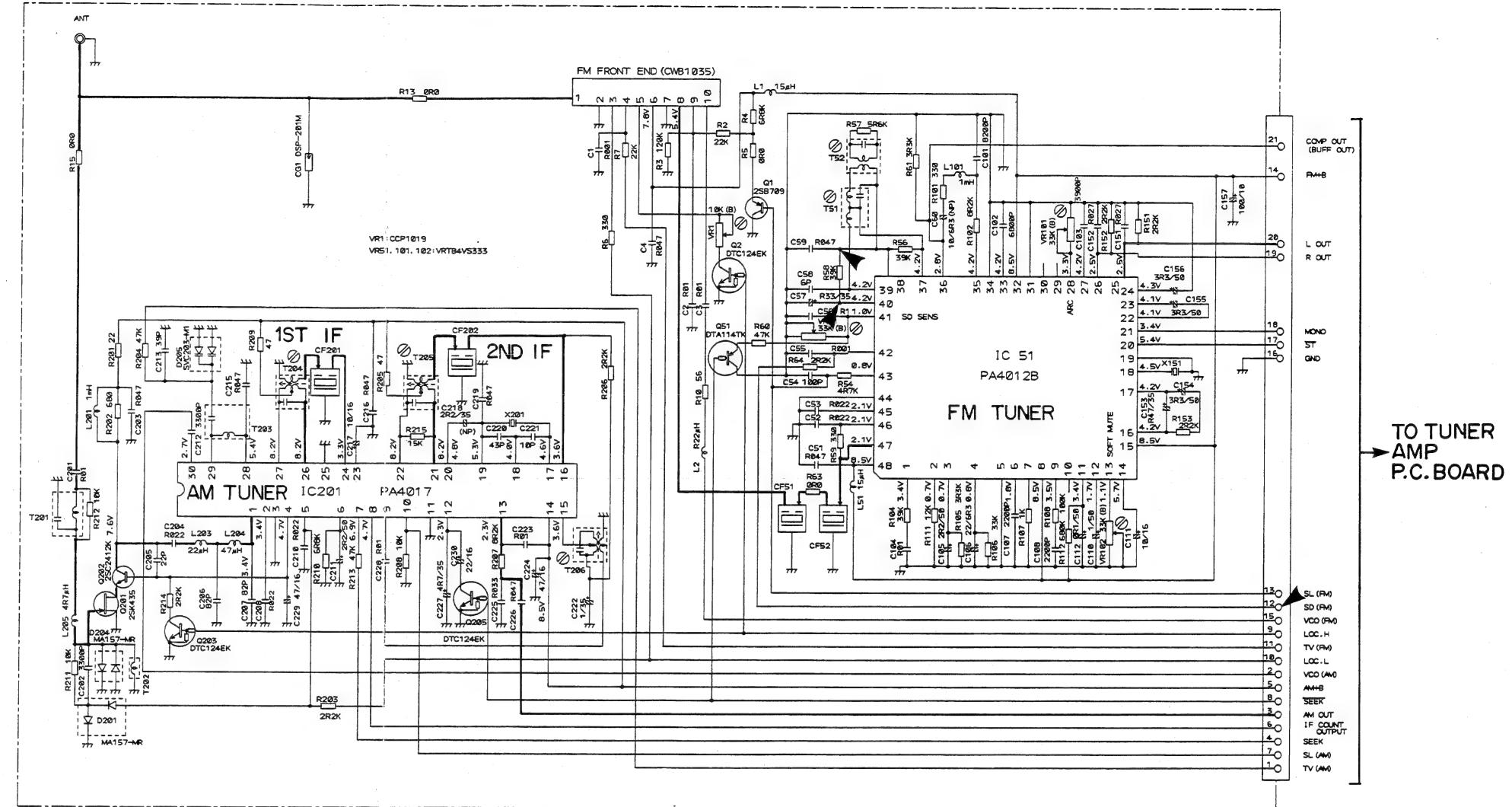


Fig. 18

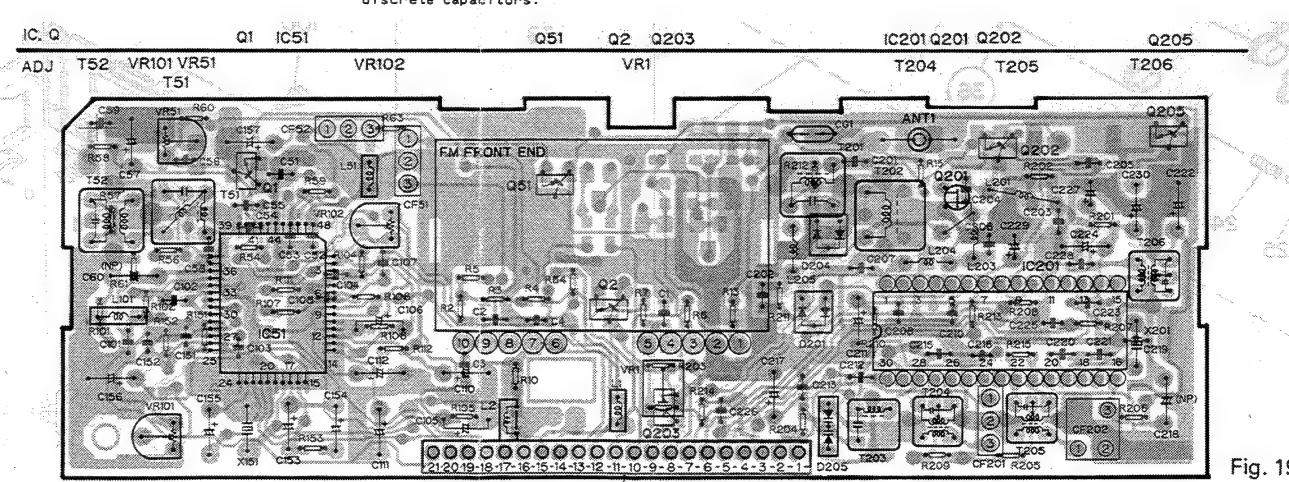


Fig. 19

**NOTE :**  
□ Symbol indicates a resistor.  
No differentiation is made between chip resistors and  
lead resistors.

**-II-** Symbol indicates a capacitor.  
No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as:

1 | 2 | 3 | 4 | 5 | 6

## 16. CHASSIS EXPLODED VIEW

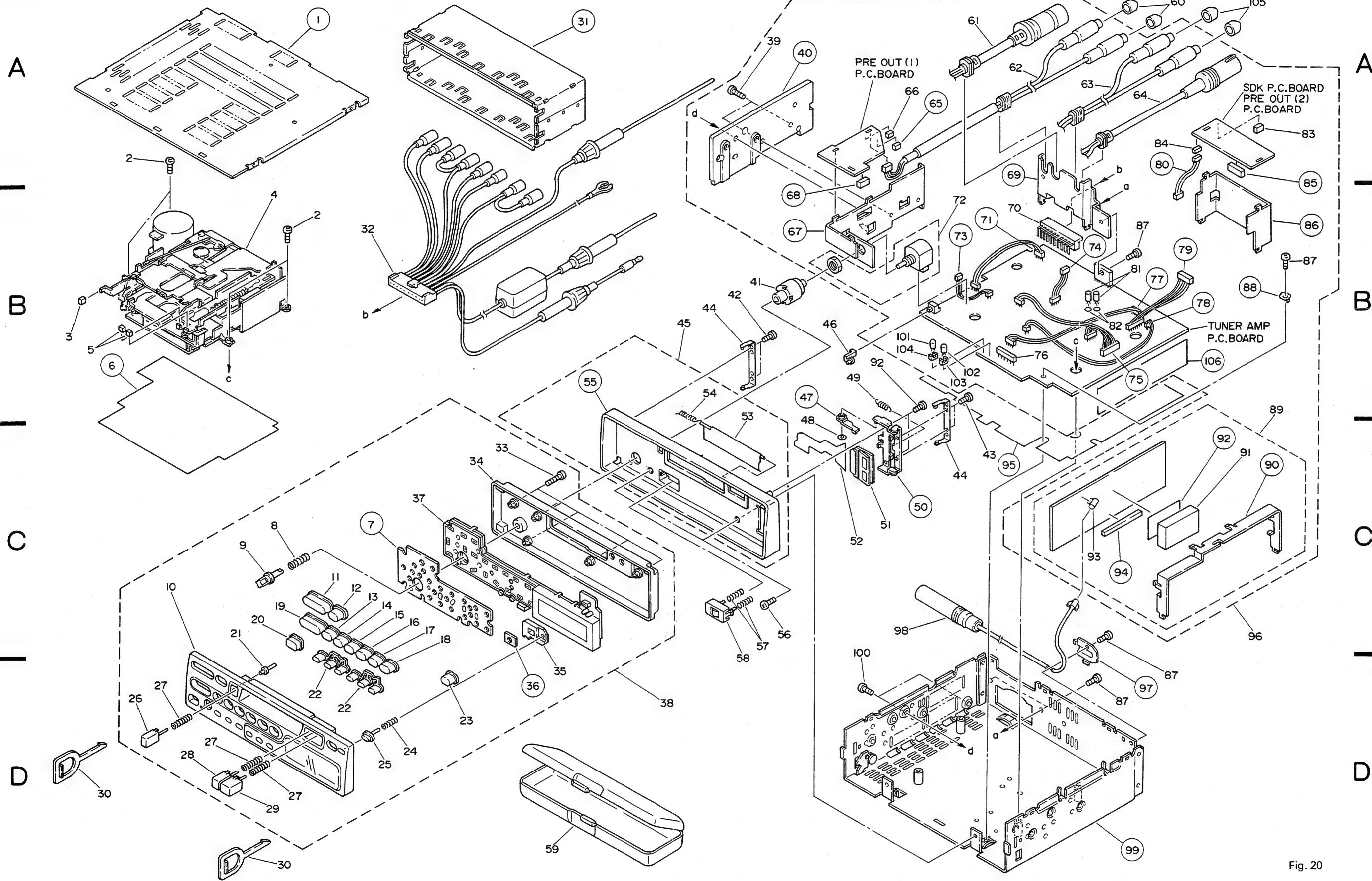


Fig. 20

•Parts List (KEH-M7300/EW)

*NOTE:*

- The parts marked with “◎” may need long time to supply and their supply is subject to refuse as the case may be.
- Because the parts with encircled number shown on the dismantling drawing are not spare parts, we are unable to supply them in principle.

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Case	CNB1431	45	Panel Unit	CXA4134
2	Screw	BMZ26P050FMC	46	Button	CAC2988
3	Button	CAC2819	47	Arm Unit	CXA4000
◎ ④	Cassette Mechanism Assy	EXK1735	48	Washer	CBF1037
			49	Spring	CBH1395
5	Button	CAC2820	50	Holder Unit	CXA3999
6	Cover	CNM3157	51	Socket	CKS1664
7	Cushion	CNM3155	52	P.C. Board	CNP2597
8	Spring	CBH1391	53	Door	CAT1360
9	Knob (Fader)	CAA1272	54	Spring	CBH1350
10	Grille Unit	CXA4142	55	Panel	CNS2152
11	Button(Vol)	CAC2821	56	Screw	CBA1154
12	Button(Shift)	CAC2822	57	Spring	CBH1393
13	Button(1)	CAC2811	58	Button Unit	CXA4417
14	Button(2)	CAC2812	59	Case	CNS2269
15	Button(3)	CAC2813	60	Cap	CNV2680
16	Button(4)	CAC2814	61	DIN Connector Cord	CDE3419
17	Button(5)	CAC2815	62	Connector	CDE3377
18	Button(6)	CAC2816	63	.....	
19	Button(Tune)	CAC2828	64	.....	
20	Button(-)	CAC2817	65	Plug	CKS-783
21	Button(Clear)	CAC2829	66	Plug	CKS1224
22	Button Unit	CXA4132	67	Holder	CNC3579
23	Button(SD)	CAC2826	68	Plug	CKS-785
24	Spring	CBH1390	69	Holder	CNC3581
25	Button	CAC2827	70	Plug	CKS-467
26	Button(Eject)	CAC2823	71	Connector	CDE3171
27	Spring	CBH1388	72	Volume (Fader)	CCS1186
28	Button(REW)	CAC2824	73	Connector	CDE3208
29	Button(FF)	CAC2825	74	Connector	CDE3173
30	Handle	CNC3664	75	Connector	CDE3174
31	Holder	CNC3342	76	Connector	CKS1260
32	Cord	CDE3182	77	Connector	CDE3210
33	Screw	BPZ20P120FZK	78	Connector	CDE3222
34	Grille Cover	CNS2151	79	.....	
35	Lens	CNV2774	80	.....	
36	Cushion	CNM3156	81	Capacitor	CCH1016
◎ ③	37 Key Board Unit	CWM2692	82	Spacer	CNW-662
38	Grille Assy	CXA4169	83	.....	
39	Screw	BMZ30P120FMC	84	.....	
40	Heat Sink	CNC3747	85	.....	
41	Knob	CAA1250	86	.....	
42	Screw	CBA1179	87	Screw	BMZ30P050FMC
43	Screw	PMZ20P030FMC	88	Holder	CNC2218
44	Holder Unit	CXA3998	◎ ⑨	FM/AM Tuner Unit	CWE1228

Mark No.	Description	Part No.	Mark No.	Description	Part No.
90 Holder	CNC3395		100 Screw	BMZ30P080FMC	
91 FM Front End	CWB1035		101 Lamp(Green)	CEL1207	
92 Insulator	CNM2105		102 Lamp	CEL1208	
93 Antenna Jack	CKX1010		103 Holder	CNV1906	
94 Plug	CKS1628		104 Holder	CNV1906	
			105 -----		
95 Insulator	CNM2941		106 Insulator	CNM3199	
⑨ 96 Tuner Amp Unit	CWM2672				
97 Holder	CNC2913				
98 Antenna Cable	CDH1128				
99 Chassis Unit	CXA4191				

	M7300/EW	M7200/US	M550/US	M7250/CA	M7250/ES	M7300SDK
No. Description	Part No.					
4 Cassette Mechanism Assy	EXK1735	EXK1735	EXK1765	EXK1765	EXK1735	EXK1735
10 Grille Unit	CXA4142	CXA4144	CXA4143	CXA4241	CXA4145	CXA4133
11 Button	CAC2821	CAC2932	CAC2932	CAC2932	CAC2821	CAC2821
16 Button	CAC2814	CAC2934	CAC2934	CAC2934	CAC2814	CAC2814
17 Button	CAC2815	CAC2935	CAC2935	CAC2935	CAC2815	CAC2815
18 Button	CAC2816	CAC2936	CAC2936	CAC2936	CAC2816	CAC2816
19 Button	CAC2828	CAC2933	CAC2933	CAC2933	CAC2828	CAC2828
32 Cord	CDE3182	CDE3181	CDE3181	CDE3181	CDE3183	CDE3182
⑨ 37 Key Board Unit	CWM2692	CWM2694	CWM2694	CWM2694	CWM2694	CWM2692
38 Grille Assy	CXA4169	CXA4171	CXA4172	CXA4173	CXA4175	CXA4168
45 Panel Unit	CXA4134	CXA4157	CXA4157	CXA4157	CXA4156	CXA4134
60 Cap	CNV2680	CNW-829	CNV2680	CNV2680	CNW-829	CNW-829
62 Connector	CDE3377	CDE3157	CDE3155	CDE3155	CDE3157	CDE3377
63 Connector	----	CDE3156	CDE3154	CDE3154	CDE3156	----
64 Connector	----	----	----	----	CDE3420	----
66 Plug	CKS1224	----	----	----	----	CKS1224
69 Holder	CNC3581	CNC3753	CNC3753	CNC3753	CNC3752	CNC3581
78 Connector	CDE3222	CDE3303	CDE3303	CDE3303	CDE3303	CDE3222
79 Connector	----	----	----	----	----	CDE3170
80 Connector	----	CDE3172	CDE3172	CDE3172	CDE3172	----
83 Plug	----	CKS1238	CKS1238	CKS1238	CKS1238	----
84 Plug	----	CKS-786	CKS-786	CKS-786	CKS-786	----
85 Plug	----	----	----	----	----	CKS1040
86 Holder	----	CNC3577	CNC3577	CNC3577	CNC3577	CNC3577
⑨ 89 FM/AM Tuner Unit	CWE1228	CWE1225	CWE1225	CWE1225	CWE1226	CWE1227
⑨ 96 Tuner Amp Unit	CWM2672	CWM2675	CWM2676	CWM2676	CWM2678	CWM2673
99 Chassis Unit	CXA4191	CXA4191	CXA4191	CXA4191	CXA4191	CXA3851
102 Lamp	CEL1208	CEL1025	CEL1025	CEL1025	CEL1025	CEL1208
105 Cap	----	CNW-829	CNV2680	CNV2680	CNW-829	----

## 17. KEY BOARD UNIT EXPLODED VIEW

### •Parts List (KEH-M7300/EW)

Mark No.	Description	Part No.	Mark No.	Description	Part No.
①	1 Key Board Unit	CWM2692	6 Bush	CNV1859	
	2 Lens	CNV2688	7 Bush	CNV1859	
	3 Holder	CNV2684	8 Plug	CKS1663	
	4 Lamp	CEL1208	9 Holder	CNV2685	
	5 Lamp	CEL1207	10 Lens	CNV2686	
			11 LCD	CAW1124	
			12 Insulator	CNM3051	
			13 Holder	CNC3576	
			14 Spacer	CNM1642	

	M7300/EW	M7200/US	M550/US	M7250/CA	M7250/ES	M7300SDK
No. Description	Part No.					
① 1 Key Board Unit	CWM2692	CWM2694	CWM2694	CWM2694	CWM2694	CWM2692
4 Lamp	CEL1208	CEL1025	CEL1025	CEL1025	CEL1025	CEL1208

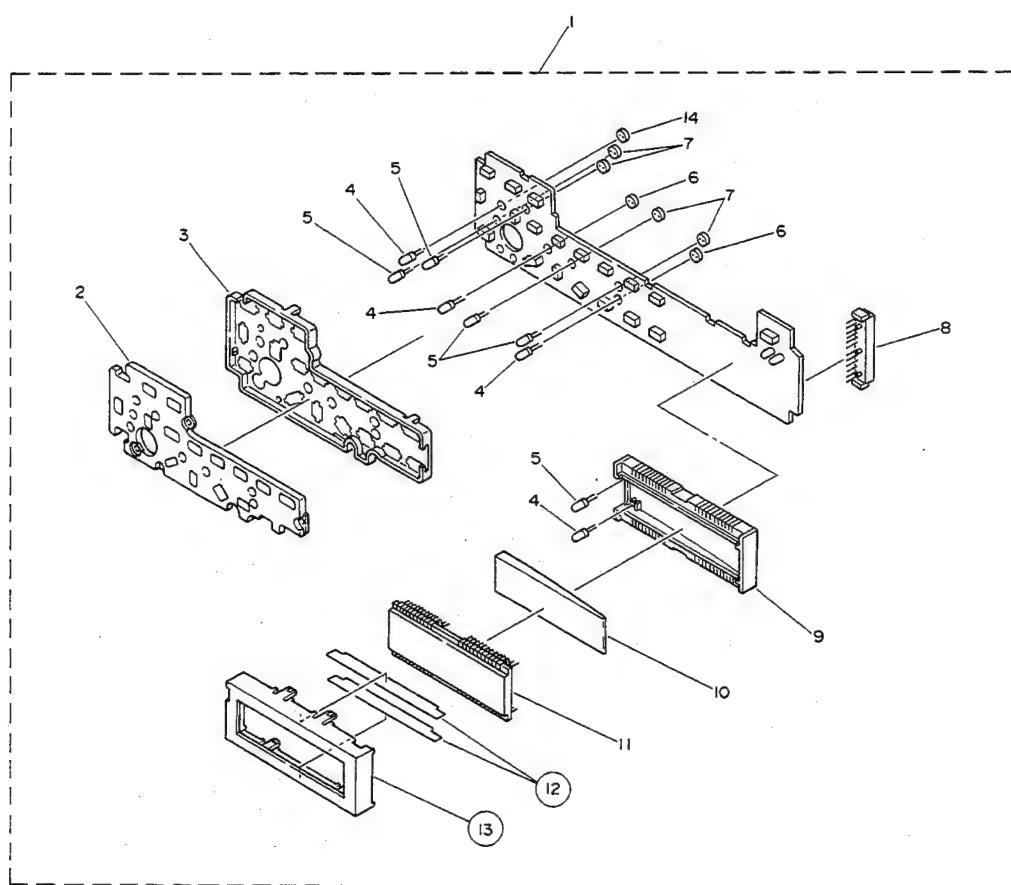


Fig. 21

1

2

3

4

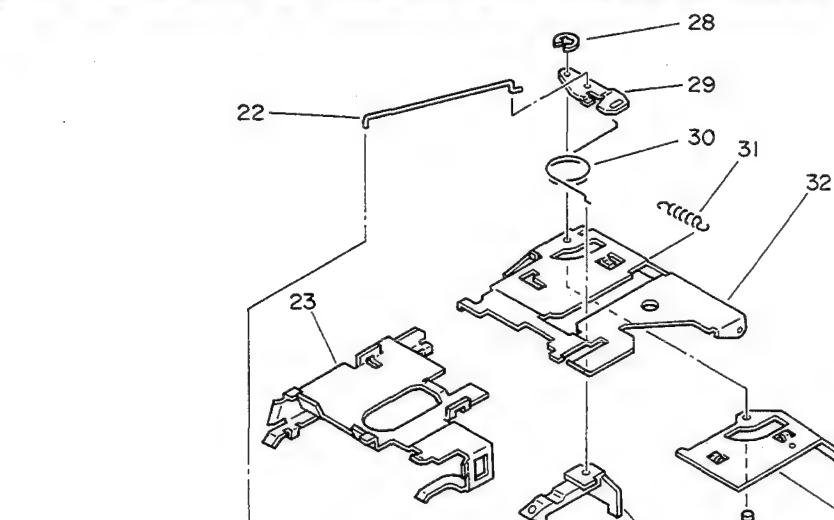
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## 18. CASSETTE MECHANISM ASSY EXPLODED VIEW

• KEH-M7300/EW, M7300SDK/WG, M7200/US, M7250/ES

A



## •Parts List (KEH-M7300/EW, M7300SDK/WG, M7300US, M7250/ES)

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Gear	ENV1212	46	Gear	ENV1262
2	Gear	ENV1211	47	Spring	EBH1337
3	Gear	ENV1203	48	Arm	ENC1236
4	Washer	CBF1037	49	Lever Unit	EXA1173
5	Washer	CBF1038	50	Arm	ENC1237
6	Spring	EBH1338	51	Spring	EBH1335
7	Screw	JFZ17P035FNI	52	Shaft	
8	Shaft	ELA1259	53	Screw	JFZ20P025FNI
9	Gear	ENV1230	54	Collar	ELA1229
10	Gear	ENV1274	55	Screw	JFZ20P040FNI
11	Gear	ENV1264	56	Washer	EBF1015
12	Gear	ENV1204	57	Spring	EBH1372
13	Screw	JFZ17P018FNI	58	Collar	ELA1220
14	Collar	ELA1244	59	Lever	ENC1269
15	Arm	ENC1241	60	Spring	EBH1361
16	Arm	ENV1261	61	Gear	ENV1205
17	Sub Chassis Unit	EXA1169	62	Screw	CBA1054
18	Screw	BMZ20P025FMC	63	Screw	CBA1038
19	Spring (Black)	EBH1306	64	Screw	CBA1015
20	Tube		65	Plug	CKS1056
21	Gear Unit	EXA1159	66	Head Unit	EXA1163
22	Spring	EBH1308	67	P.C. Board	ENP1042
23	Holder	ENC1205	68	Switch	ESN1005
24	Lever	ENC1243	69	Spring	EBH1334
25	Lever	ENC1235	70	Gear	ENV1208
26	Spring	EBH1307	71	Spring	EBH1333
27	Real Unit	EXA1167	72	Arm	ENC1240
28	Washer	YE15FUC	73	Screw	BSZ20P040FMC
29	Arm	ENC1221	74	Arm	ENV1265
30	Spring	EBH1305	75	Spring	EBH1336
31	Spring	EBH1364	76	Arm Unit	EXA1171
32	Frame	ENC1204	77	Flywheel Unit	EXA1161
33	Arm	ENC1215	78	Gear	ENV1228
34	Shaft	ELA1251	79	Belt	ENT1020
35	Lever	ENV1222	80	Arm	ENV1206
36	Head Base Unit	EXA1203	81	Spring	EBH1317
37	Washer	YE12FUC	82	Chassis Unit	EXA1168
38	Solenoid	EXP1008	83	Screw	PMS26P025FUC
39	Spring	EBH1353	84	Pulley	ENV1207
40	Lever Unit	EXA1172	85	Gear	ENV1209
41	Bracket	ENC1239	86	Belt	ENT1018
42	Spring	EBH1339	87	Spring (Silver)	EBH1322
43	Screw	EBA1023	88	Lever (FF)	ENC1244
44	Screw	BMZ20P025FMC	89	Spring (Brown)	EBH1365
45	Spring	EBH1340	90	Motor Unit	EXA1162

**KEH-M7300**

Mark No.	Description	Part No.	Mark No.	Description	Part No.
91	Lever (REW)	ENC1245	101	Arm	ENC1264
92	Washer	YE20FUC	102	Spring	EBH1366
93	Pinch Roller Unit	EXA1193	103	Pinch Roller Unit	EXA1194
94	Washer	WH23FMC	104	Arm	ENV1227
95	Screw	BSZ23P040FMC	105	Arm Unit	EXA1155
96	Roller	ELA1247	106	Washer	YE30FUC
97	Arm Unit	EXA1166	107	Spring	EBH1310
98	Arm	ENC1266			
99	Spring	EBH1312			
100	Spring	EBH1311			

•KEH-M550/US, M7250/CA

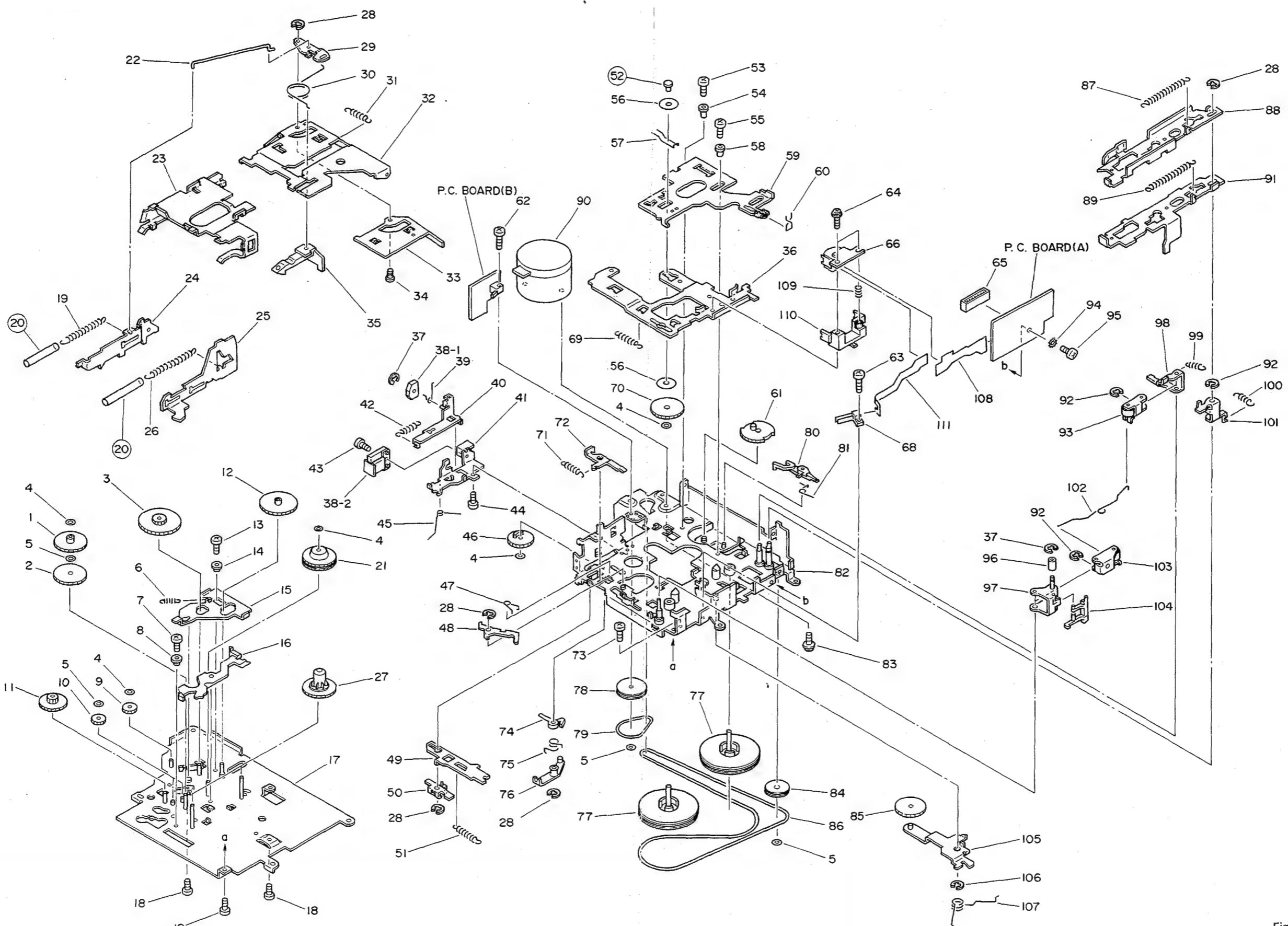


Fig. 23

**•Parts List (KEH-M550/US, M7250/CA)**

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1 Gear	ENV1212	46 Gear	ENV1262		
2 Gear	ENV1211	47 Spring	EBH1337		
3 Gear	ENV1203	48 Arm	ENC1236		
4 Washer	CBF1037	49 Lever Unit	EXA1173		
5 Washer	CBF1038	50 Arm	ENC1237		
6 Spring	EBH1338	51 Spring	EBH1335		
7 Screw	JFZ17P035FNI	52 Shaft			
8 Shaft	ELA1259	53 Screw	JFZ20P025FNI		
9 Gear	ENV1230	54 Collar	ELA1229		
10 Gear	ENV1274	55 Screw	JFZ20P040FNI		
11 Gear	ENV1264	56 Washer	EBF1015		
12 Gear	ENV1204	57 Spring	EBH1372		
13 Screw	JFZ17P018FNI	58 Collar	ELA1220		
14 Collar	ELA1244	59 Lever	ENC1269		
15 Arm	ENC1241	60 Spring	EBH1361		
16 Arm	ENV1261	61 Gear	ENV1205		
17 Sub Chassis Unit	EXA1169	62 Screw	CBA1054		
18 Screw	BMZ20P025FMC	63 Screw	CBA1038		
19 Spring (Black)	EBH1306	64 Screw	EBA1024		
20 Tube		65 Plug	CKS1056		
21 Gear Unit	EXA1159	66 Head	EPB1015		
22 Spring	EBH1308	67 P.C. Board	ENP1043		
23 Holder	ENC1205	68 Switch	ESN1005		
24 Lever	ENC1243	69 Spring	EBH1334		
25 Lever	ENC1235	70 Gear	ENV1208		
26 Spring	EBH1307	71 Spring	EBH1333		
27 Real Unit	EXA1167	72 Arm	ENC1240		
28 Washer	YE15FUC	73 Screw	BSZ20P040FMC		
29 Arm	ENC1221	74 Arm	ENV1265		
30 Spring	EBH1305	75 Spring	EBH1336		
31 Spring	EBH1364	76 Arm Unit	EXA1171		
32 Frame	ENC1204	77 Flywheel Unit	EXA1161		
33 Arm	ENC1215	78 Gear	ENV1229		
34 Shaft	ELA1251	79 Belt	ENT1020		
35 Lever	ENV1222	80 Arm	ENV1206		
36 Head Base Unit	EXA1203	81 Spring	EBH1317		
37 Washer	YE12FUC	82 Chassis Unit	EXA1168		
38 Solenoid	EXP1008	83 Screw	PMS26P025FUC		
39 Spring	EBH1353	84 Pulley	ENV1207		
40 Lever Unit	EXA1172	85 Gear	ENV1209		
41 Bracket	ENC1239	86 Belt	ENT1018		
42 Spring	EBH1339	87 Spring (Silver)	EBH1322		
43 Screw	EBA1023	88 Lever (FF)	ENC1244		
44 Screw	BMZ20P025FMC	89 Spring (Brown)	EBH1365		
45 Spring	EBH1340	90 Motor Unit	EXA1162		

Mark No.	Description	Part No.	Mark No.	Description	Part No.
91 Lever (REW)		ENC1245	101 Arm		ENC1264
92 Washer		YE20FUC	102 Spring		EBH1366
93 Pinch Roller Unit		EXA1193	103 Pinch Roller Unit		EXA1194
94 Washer		WH23FMC	104 Arm		ENV1227
95 Screw		BSZ23P040FMC	105 Arm Unit		EXA1155
96 Roller		ELA1247	106 Washer		YE30FUC
97 Arm Unit		EXA1166	107 Spring		EBH1310
98 Arm		ENC1266	108 P. C. Board		ENP1043
99 Spring		EBH1312	109 Spring		EBH1065
100 Spring		EBH1311	110 Guide		ENV1270
			111 P. C. Board		ENP1044

## 19. PACKING METHOD

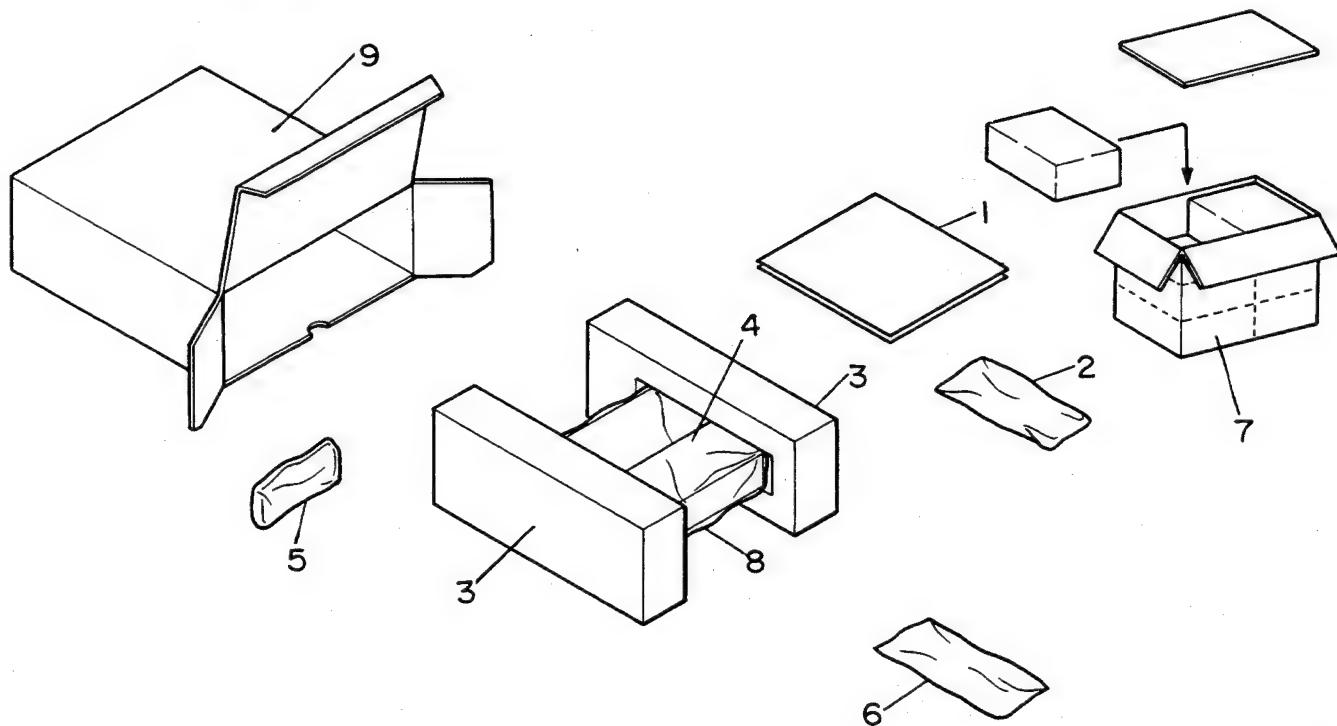


Fig. 24

## •Parts List (KEH-M7300/EW)

\* :Non spare part

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1-1	Owner's Manual	CRD1478	6-2	Screw(×1)	CBA1002
1-2	Owner's Manual	CRD1489	6-3	Cord	CDE1289
1-3	Installation Manual	CRD1491	6-4	Handle(×2)	CNC3664
* 1-4	Card	CRY-062	6-5	Strap	CNF-111
2	Cord	CDE3182	6-6	Bush	CNV1009
3	Styrofoam	CHP1405	6-7	Nut(×2)	NF50FMC
* 4	Holder	CNC3342	* 7	Contain Box	CHL1986
5	Case	CNS2269	8	Cover	CEG1092
6	Accessory Assy	CEA1633	9	Carton	CHG1986
6-1	Screw(×1)	CBA-102			

	M7300/EW	M7200/US	M550/US	M7250/CA	M7250/ES	M7300SDK
No. Description	Part No.					
1-1 Owner's Manual	CRD1478	CRD1487	CRB1216	CRD1480	CRD1481	CRD1479
1-2 Owner's Manual	CRD1489	----	----	----	----	----
1-3 Installation Manual	CRD1491	----	----	----	----	----
* 1-4 Card	CRY-062	ARY1008	ARY1008	ARY1008	----	CRY-062
2 Cord	CDE3182	CDE3181	CDE3181	CDE3181	CDE3183	CDE3182
7 Contain Box	CHL1986	CHL1989	CHL1991	CHL1990	CHL1988	CHL1987
9 Carton	*CHG1986	CHG1989	CHG1991	*CHG1990	*CHG1988	*CHG1987

## Owner's Manual

Part No.	Model	Language
CRD1478	KEH-M7300/EW	English, French, German, Spanish, Portuguese
CRD1489	KEH-M7300/EW	Swedish, Norwegian, Dutch, Italian, Finnish
CRD1487	KEH-M7200/US	English, French
CRB1216	KEH-M550/US	English
CRD1480	KEH-M7250/CA	English, French
CRD1481	KEH-M7250/ES	English, French, Spanish, Arabic
CRD1479	KEH-M7300SDK	French, German

## 20. ELECTRICAL PARTS LIST

### NOTE:

- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

#### Chip Resistor

RS1/8S □□□J, RS1/10S □□□J

#### Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

Unit Number :

Unit Name : FM/AM Tuner Unit (KEH-M7300SDK/WG)

### MISCELLANEOUS

Mark	Circuit Symbol & No.	Part Name	Part No.	Mark	Circuit Symbol & No.	Part Name	Part No.
IC 51			PA40128	R 60			RS1/10S473J
IC 201			PA4017	R 61	105		RS1/10S332J
Q 1	Chip Transistor		2SB709	R 64			RS1/10S222J
Q 2	Chip Transistor		DTC124EK	R 102			RS1/10S822J
Q 51	Chip Transistor		DTA114TK-94	R 106			RS1/10S333J
Q 201			2SK435	R 107			RS1/10S102J
Q 202			2SC2412K	R 108			RS1/10S104J
Q 203 205	Chip Transistor		DTC124EK	R 111			RS1/10S123J
D 201 204	Chip Diode		MA157-MR	R 112			RS1/10S684J
D 205			SVC203-M1	R 151	152 153		RS1/10S222J
L 1 51	Inductor	CTF1241	R 201				RS1/10S220J
L 2	Inductor	CTF1086	R 202				RS1/10S681J
L 101	Inductor	CTF1126	R 203	206	214		RS1/10S222J
L 201	Inductor	CTF1084	R 204	213			RS1/10S473J
L 203	Ferri-Inductor	LAU220K	R 205	209			RS1/10S470J
L 204	Ferri-Inductor	LAU470K	R 207				RS1/10S822J
L 205	Ferri-Inductor	LAU47K	R 208	211	212		RS1/10S103J
T 51	Coil	CTE1021	R 210				RS1/10S682J
T 52	Coil	CTE1022	R 215				RS1/10S153J
T 201	Coil	CTB1020					
					CAPACITORS		
T 202	Coil	CTB1004					
T 203	Coil	CTB1040					
T 204	Coil	CTE1037					
T 205	Coil	CTE1038	C 1				CKSQYB102K50
T 206	Coil	CTE1039	C 2	3	104		CKSQYB103K50
			C 4	59			CKSQYF473Z25
CG 1		DSP-201M-S00B	C 51				CKSQYF473Z25
CF 51 52	Ceramic Filter	CTF-182	C 52	53			CKSQYB223K25
CF 201	Ceramic Filter	CTF1041					
CF 202	Filter	CTF1085	C 54				CCSQSL101J50
X 151	Ceramic Resonator	CSS1055	C 55				CKSQYB102K50
			C 56				CKSQYF104Z25
X 201	Crystal Resonator	CSS1014	C 57				CSZAR33K35
VR 1	Semi-fixed	CCP1019	C 58				CCSQCH060D50
VR 51 101 102	Semi-fixed 33kΩ (B)	VRTB4VS333					
	FM Front End	CWB1035	C 60				CEALHP100M6R3
			C 101				CKSQYB822K50
			C 102				CKSQYB682K50
			C 103				CKSQYB392K50
			C 105				CEA2R2M50LL
RESISTORS							
Mark	Circuit Symbol & No.	Part Name	Part No.				
R 2 7			RS1/10S223J	C 106			CEA220M6R3LL
R 3			RS1/10S124J	C 107	108		CKSQYB222K50
R 4			RS1/10S682J	C 110			CEA010M50LL
R 5 13 63			RS1/10S0R0J	C 111			CEA100M16LL
R 6 59 101			RS1/10S331J	C 112			CEA0R1M50LL
R 10			RS1/10S560J	C 151	152		CKSQYB273K25
R 15			RS1/10S0R0J	C 153			CSZAR47M35L
R 54			RS1/10S472J	C 154	155 156		CEA3R3M50LL
R 56 58 104			RS1/10S393J	C 157			CEA101M10LS
R 57			RS1/10S562J	C 201	223 228		CKSQYB103K25

Mark =====	Circuit Symbol & No.	==== Part Name	Part No.	Mark =====	Circuit Symbol & No.	==== Part Name	Part No.
C 202	212		CKSQY8332K50	D 553	907		H2S9R1JB2
C 203	215 216 219 226		CKSQYF473225	D 908			ERA15-02VH
C 204	208 210		CKSQYB223X25	D 951			H2S5R6JB2
C 205			CCSQCH220J50	D 952			H2S7R5JB2
C 206	207		CCSQCH820J50	D 953 958 959			ERA15-02VH
C 211			CEA2R2M50LL	D 954			H2S6R8JB2
C 213			CCSQCH390J50	D 957			ERC04-02F
C 217			CEA100M16LL	L 501		Ferrri-Inductor	LAU2R2M
C 218			CEA2R2M35NPLL	L 952		Ferrri-Inductor	LAU330K
C 220			CCSQCH430J50	LB 501			CWW1302
C 221			CCSQCH100D50	LB 505			CWW1240
C 222			CSZA010K35L	LB 951			CWW1301
C 224			CEA470M16LL	LB 952			CWW1128
C 225			CKSQYB333K25	LB 953			CWW1292
C 227			CEA4R7M35LS	LB 954			CWW1291
C 229			CEA470M16LS	X 501		Crystal Resonator	CSS1011
C 230			CEA220M16LL	X 701		Ceramic Resonator	CSS1019
				VR 351	352	Semi-fixed 33kΩ (B)	VRTB6VS333
				S 2		Switch(Clear)	CSG1012
				IL 951		Lamp(Green)	CEL1207
				IL 952		Lamp(Orange)	CEL1208
				VR 1		Volume(Fader)	CCS1186
				EF 953 954 955		EMI filter	CCG1003
				BZ 902		Buzzer	CPV1013
RESISTORS							
Mark =====	Circuit Symbol & No.	==== Part Name	Part No.	Mark =====	Circuit Symbol & No.	==== Part Name	Part No.
IC 350			TA8162SN	R 351	352		RS1/10S104J
IC 351			CXA1102P	R 353	354		RS1/10S133J
IC 352			AN6263N	R 355	356		RS1/10S183J
IC 451			KHA272	R 357	358		RS1/10S334J
IC 501			TA8215H-A	R 359	360		RS1/10S181J
IC 502			PD4302	R 361	362 502 522		RS1/10S222J
IC 701			KHAC02	R 363	364		RS1/10S822J
IC 951			TA8214K	R 366	501 504 955 957 958		RS1/10S103J
Q 350 457 458 502 506 950 958 959 962 975	DTC114TS			R 367	537 954		RS1/10S473J
Q 351 352 551 552 807 808	DTC314TS			R 368	702		RS1/10S684J
Q 451 452 453 454	DTC114TS			R 369			RD1/4PS154JL
Q 455 509	DTA114TS			R 370			RS1/10S154J
Q 456 800	DTA114ES			R 371	372		RS1/10S473J
Q 501 504 703 963 969	2SC2458			R 373	515 519 956		RS1/10S101J
Q 503	2SC2498			R 375			RS1/10SOR0J
Q 505	2SK330			R 376	543 544 545 546 549 601 602 821		RS1/10SOR0J
Q 510	2SC3113			R 379			RS1/10SOR0J
Q 550 553 976	DTC114YS			R 380	381 822 873		RS1/10SOR0J
Q 554 805 806 966	2SA1048			R 382	383 384 614 615 616 988 989 990		RS1/8SOR0J
Q 701	DTB123YS			R 385	386 486 618 992		RS1/8SOR0J
Q 702	DTC114WS			R 389	824 993		RS1/8SOR0J
Q 801 802	2SC2458			R 390			RS1/10S104J
Q 917	2SD2037			R 392			RS1/8SOR0J
Q 918 978 980	DTA114TK	Chip Transistor		R 393			RD1/4PS473JL
Q 951 952 953	DTB123YS			R 451	452 509 961		RS1/10S104J
Q 954	DTC114TS			R 453	454		RS1/10S102J
Q 955 956	DTC314TS			R 455	456 524 527 529 805 806		RS1/10S473J
Q 957 961 964	DTA143ZS			R 457			RS1/8S223J
Q 960 977 979	2SB1243			R 458			RD1/4PM223J
Q 965	DTC114TS			R 459	460		RS1/10S563J
Q 974	2SB772			R 461	462		RS1/10S333J
D 350 440 504 505 506 507 511	ISS133			R 469	470 475 476 541 542 547		RS1/10SOR0J
D 450	IS1555			R 473	474		RS1/10S183J
D 451 452 453 454 501 502 550 551 552	ISS133			R 479	483 605 987		RS1/10SOR0J
D 503 700	H2S3R0E82			R 480	482		RS1/10SOR0J

Mark =====	Circuit Symbol & No.	==== Part Name	Part No.	Mark =====	Circuit Symbol & No.	==== Part Name	Part No.	
R 485 606 607 608 610 611 613		RS1/8S0R0J	C 369 964				CKSQYB103K50	
R 487 520 521 815 816 920 985 986		RS1/10S102J	C 370				CCSQCH330J50	
R 503 563 819 820 970		RS1/10S223J	C 372 563				CEA01M150LS2	
R 505 801 802		RS1/10S221J	C 383 384	4.7 μ F/35V			CCH1016	
R 506		RD1/4PS222JL	C 455 953				CEA470M16L2	
R 507		RD1/4PS392JL	C 456				CEA100M16LS2	
R 508		RS1/10S223J	C 500				CASA04R7M10	
R 510 516		RS1/10S472J	C 501				CCG1008	
R 511 534		RS1/8S104J	C 502 504 505 507 520 702				CKPYB103M16L	
R 512		RD1/4PM102J	C 509 526				CKSYB102K50	
R 513		RS1/10S152J	C 511				CKPYB101K50L	
R 514		RS1/10S182J	C 512				CKSYB681K50	
R 517		RS1/10S331J	C 513				CCSQCH101J50	
R 518		RS1/10S821J	C 515	4.7 μ F/16V			CCH1005	
R 523 564 703 921 973		RS1/10S222J	C 516				CEAR47M50LS2	
R 525		RS1/10S474J	C 517	1000 μ F/6.3V			CCH1112	
R 526		RD1/4PM102J	C 518				CCSQCH100D50	
R 530 531		RS1/10S681J	C 525				CCSQCH090D50	
R 532 533		RS1/8S681J	C 527				CKSQYF104Z25	
R 538		RS1/10S563J	C 528				CKSQYB473K25	
R 539		RS1/10S0R0J	C 550				CEA101M10L2	
R 540		RS1/10S104J	C 551 552				CEHAS4R7M35	
R 548		RS1/10S102J	C 553 554 805 806 962				CKSQYB102X50	
R 550		RS1/10S391J	C 556				CEHAQ101M10	
R 553		RD1/4PS392JL	C 557 558				CEHAQ470M25	
R 554		RD1/4PM392J	C 559 561 562				CQEA224J63	
R 555 556		RD1/4PS471JL	C 560				CQEA224J63	
R 557 558 559 560		RD1/4PS487JL	C 564				CEA472M16L2	
R 561 562		RS1/10S152J	C 600				CASA0100M10	
R 701		RS1/8S473J	C 703				CQMA683J50LL	
R 800		RS1/10S470J	C 704				CEAR33M50LS2	
R 803 804		RS1/10S223J	C 800				CEA221M10L2	
R 807 808 817 818		RS1/10S471J	C 801 802 807 808				CEA4R7M35LS	
R 809 810		RS1/10S681J	C 803 804				CEALNP100M16	
R 811 812		RS1/10S133J	C 913				CEA220M16LS	
R 813 814		RS1/10S472J	C 951	470 μ F/10V			CCH1019	
R 922		RS1/8S472J	C 952 963				CKSQYB473K25	
R 923		RS1/10S472J	C 956				CCG1008	
R 950		RS1/8S0R0J	C 961				CEA2R2M50LS2	
R 951		RS1/8S681J						
R 952 971 976		RD1/2PS681JL		Unit Number :				
R 953		RS1/8S223J		Unit Name : Key Board Unit(KEH-M7300SDK/WG)				
R 959 965		RS1/10S102J		MISCELLANEOUS				
R 960 977 978 979 980 981		RS1/8S103J						
R 969		RS1/10S1R0J						
Capacitors	Mark =====	Circuit Symbol & No.	==== Part Name	Part No.	Mark =====	Circuit Symbol & No.	==== Part Name	Part No.
				X 901		Ceramic Resonator	CSS1050	
C 350 371		CEA101M10LS			LCD	CAW1124		
C 351 352		CCSQCH881J50	I L 902 904 905 906 907 912	Lamp(Green)	CEL1207			
C 353 354 363 701 705 914 954 957		CEA470M16LS	I L 908 909 910 911 913	Lamp(Orange)	CEL1208			
C 355 356 510 514		CKSQYB103K50	S 901 902 903 904 905 906 907 908 909 910	CSG-253				
C 357 361 362 955 958		CEA100M16LS2	911 912 913 914 915 916 917 918 919	Switch				
C 358 380 381 451 452 453 454 457 458 705	CEA4R7M35LS							
C 359 360	CEA010M50LS2							
C 364 555	CKSQYF104Z25							
C 365	CEA101M10LS							
C 367 368	CEAR68M50LS2							
Resistors	Mark =====	Circuit Symbol & No.	==== Part Name	Part No.	Mark =====	Circuit Symbol & No.	==== Part Name	Part No.
				R 901 902 903 904 905				
				R 906				RS1/8S103J
				R 907				RS1/10S104J
				R 908				RS1/10S473J
				R 909 910 911 912 913 914 915 916 917 918	RS1/10S103J			
								RS1/10S471J

## CAPACITORS

Mark	Circuit Symbol & No.	Part Name	Part No.
C	901		CEA470M6R3LS
C	902		CKSQYF473Z25
C	903		CCSOCH331J50
C	904 905		CKSQYB103K50
C	906 907		CCSQCH221J50
C	908 909 910 911 912		CKSQYB152K50

Unit Number :  
Unit Name : P.C. Board(A)

Mark	Circuit Symbol & No.	Part Name	Part No.
S	2	Switch(FWD/REV)	ESH1003

Unit Number :  
Unit Name : P.C. Board(B)

Mark	Circuit Symbol & No.	Part Name	Part No.
D	1		F1SR35-100A
S	3	Switch(Tape/Tun)	ESH1004
SO	1	Solenoid	EXP1008

## Miscellaneous Parts List(KEH-M7300SDK/WG)

Mark	Circuit Symbol & No.	Part Name	Part No.
HD	1	Head Unit	EXA1163
M	1	Motor Unit	EXA1162

## Tuner Amp Unit

	M7300/EW	M7200/US	M550/US	M7250/CA	M7250/ES	M7300SDK/WG
TC501	----	CCG-070	CCG-070	CCG-070	CCG-070	----
IL952	CEL1208	CEL1025	CEL1025	CEL1025	CEL1025	CEL1208
IC502	PD4302	PD4343A	PD4343A	PD4343A	PD4343A	PD4302
IC701	----	----	----	----	----	KHA142
Q453, 454	----	----	----	----	----	DTC114TS
Q459, 460	----	----	----	----	DTC114TS	----
Q506	DTC114TS	----	----	----	----	DTC114TS
Q701	----	----	----	----	----	DTB123YS
Q702	----	----	----	----	----	DTC114WS
Q703	----	----	----	----	----	2SC2458
Q850	----	DTA114ES	DTA114ES	DTA114ES	DTA114ES	----
Q851, 852	----	2SC2458	2SC2458	2SC2458	2SC2458	----
Q853, 854	----	2SA1048	2SA1048	2SA1048	2SA1048	----
Q855, 856	----	DTC314TS	DTC314TS	DTC314TS	DTC314TS	----
Q917	----	----	----	----	----	2SD2037
Q971, 973	----	----	----	----	DTC144TS	----
Q972	----	----	----	----	DTA144ES	----
D508	----	ISS133	ISS133	ISS133	----	----
D509	----	----	----	----	ISS133	----
D511	----	----	----	----	----	ISS133
D700	----	----	----	----	----	HZS3R0EB2
D907	----	----	----	----	----	HZS9R1JB2
X701	----	----	----	----	----	CSS1019
R351, 352	RS1/10S104J	RS1/10S104J	RS1/10S223J	RS1/10S223J	RS1/10S104J	RS1/10S104J
R463, 464	----	----	----	----	RS1/10S303J	----
R465, 466	----	----	----	----	RS1/10S683J	----
R503, 970	----	----	----	----	RS1/10S223J	----
R570, 967, 968	----	----	----	----	RS1/10S222J	----
R571	----	----	----	----	RS1/10S473J	----
R606, 610, 611, 992	----	----	----	----	----	RS1/8S0R0J
R612, 619, 620	----	----	----	----	RS1/8S0R0J	----
R615	RS1/8S0R0J	----	----	----	----	RS1/8S0R0J
R701	----	----	----	----	----	RS1/8S473J
R702	----	----	----	----	----	RS1/10S684J
R703	----	----	----	----	----	RS1/10S222J
R850	----	RS1/10S470J	RS1/10S470J	RS1/10S470J	RS1/10S470J	----
R851, 852	----	RS1/10S221J	RS1/10S221J	RS1/10S221J	RS1/10S221J	----
R853, 854, 869, 870	----	RS1/10S223J	RS1/10S223J	RS1/10S223J	RS1/10S223J	----
R855, 856	----	RS1/10S473J	RS1/10S473J	RS1/10S473J	RS1/10S473J	----
R857, 858, 867, 868	----	RS1/10S471J	RS1/10S471J	RS1/10S471J	RS1/10S471J	----
R859, 860	----	RS1/10S681J	RS1/10S681J	RS1/10S681J	RS1/10S681J	----
R861, 862	----	RS1/10S133J	RS1/10S133J	RS1/10S133J	RS1/10S133J	----
R863, 864	----	RS1/10S472J	RS1/10S472J	RS1/10S472J	RS1/10S472J	----
R865, 866	----	RS1/10S102J	RS1/10S102J	RS1/10S102J	RS1/10S102J	----
R923	----	----	----	----	RS1/10S472J	RS1/10S472J

	M7300/EW	M7200/US	M550/US	M7250/CA	M7250/ES	M7300SDK/WG
R991	----	RS1/8S0R0J	RS1/8S0R0J	RS1/8S0R0J	RS1/8S0R0J	----
R998	----	RD1/4PS222JL	RD1/4PS222JL	RD1/4PS222JL	----	----
C351, 352	CCSQCH681J50	CCSQCH681J50	CCSQCH331J50	CCSQCH331J50	CCSQCH681J50	CCSQCH681J50
C516	CEAR47M50LS2	----	----	----	----	CEAR47M50LS2
C525	CCSQCH090D50	----	----	----	----	CCSQCH090D50
C529	----	----	----	----	CKSQYF104Z25	----
C701, 705, 914	----	----	----	----	----	CEA470M16LS
C702	----	----	----	----	----	CKPYY103M16L
C703	----	----	----	----	----	CQMA683J50LL
C704	----	----	----	----	----	CEAR33M50LS2
C706	----	----	----	----	----	CEA4R7M35LS
C850	----	CEA221M10L2	CEA221M10L2	CEA221M10L2	CEA221M10L2	----
C851, 852, 857, 858	----	CEA4R7M35LS	CEA4R7M35LS	CEA4R7M35LS	CEA4R7M35LS	----
C853, 854	----	CEALNP100M16	CEALNP100M16	CEALNP100M16	CEALNP100M16	----
C855, 856	----	CKSQYB102K50	CKSQYB102K50	CKSQYB102K50	CKSQYB102K50	----
C913	----	----	----	----	----	CEA220M16LS

## FM/AM Tuner Unit

	M7300/EW	M7200/US	M550/US	M7250/CA	M7250/ES	M7300SDK/WG
Q3	----	2SA1162	2SA1162	2SA1162	----	----
Q51	----	----	----	----	----	DTA114TK
D11, 12	----	1SV128A-BB	1SV128A-BB	1SV128A-BB	----	----
VR1	CCP1019	CCP1025	CCP1025	CCP1025	CCP1019	CCP1019
L2	CTF1086	----	----	----	----	CTF1086
L11, 12	----	CTF1065	CTF1065	CTF1065	----	----
L101	CTF1126	CTF1170	CTF1170	CTF1170	CTF1126	CTF1126
L201	CTF1084	CTF1026	CTF1026	CTF1026	CTF1026	CTF1084
R3	RS1/10S124J	RS1/10S683J	RS1/10S683J	RS1/10S683J	RS1/10S124J	RS1/10S124J
R8	----	RS1/10S331J	RS1/10S331J	RS1/10S331J	----	----
R9	----	RS1/10S223J	RS1/10S223J	RS1/10S223J	----	----
R10	RS1/10S560J	RS1/10S0R0J	RS1/10S0R0J	RS1/10S0R0J	RS1/10S0R0J	RS1/10S560J
R11	----	RS1/10S104J	RS1/10S104J	RS1/10S104J	----	----
R12	----	RS1/10S470J	RS1/10S470J	RS1/10S470J	----	----
R13	RS1/10S0R0J	----	----	----	RS1/10S0R0J	RS1/10S0R0J
R14	----	RS1/10S0R0J	RS1/10S0R0J	RS1/10S0R0J	RS1/10S0R0J	----
R58	RS1/10S393J	RS1/10S223J	RS1/10S223J	RS1/10S223J	RS1/10S393J	RS1/10S393J
R60	----	----	----	----	----	RS1/10S473J
R61	RS1/10S332J	----	----	----	----	RS1/10S332J
R101	RS1/10S331J	RS1/10S471J	RS1/10S471J	RS1/10S471J	RS1/10S471J	RS1/10S331J
R151, 152	RS1/10S222J	RS1/10S152J	RS1/10S152J	RS1/10S152J	RS1/10S152J	RS1/10S222J
C11, 12, 13, 14	----	CCSQCH220J50	CCSQCH220J50	CCSQCH220J50	----	----
C15	----	CKSQYB223K25	CKSQYB223K25	CKSQYB223K25	----	----
C57	CSZAR33K35	CEAR68M50LS2	CEAR68M50LS2	CEAR68M50LS2	CSZAR33K35	CSZAR33K35
C101	CKSQYB822K50	CKSQYB392K50	CKSQYB392K50	CKSQYB392K50	CKSQYB392K50	CKSQYB822K50
C151, 152	CKSQYB273K25	CKSQYB563K25	CKSQYB563K25	CKSQYB563K25	CKSQYB563K25	CKSQYB273K25

## Key Board Unit

	M7300/EW	M7200/US	M550/US	M7250/CA	M7250/ES	M7300SDK/WG
IL908-911, 913	CEL1208	CEL1025	CEL1025	CEL1025	CEL1025	CEL1208

## Miscellaneous Parts List

	M7300/EW	M7200/US	M550/US	M7250/CA	M7250/ES	M7300SDK/WG
HD1	EXA1163	EXA1163	EPB1015	EPB1015	EXA1163	EXA1163



# Service Manual

ORDER NO.  
**CRT1328**

CASSETTE MECHANISM ASSEMBLY

# **CX-197**

**NOTE**

- This service manual describes operation of the cassette mechanism incorporated in models listed in the table below.
- When performing repairs use this manual together with the specific manual for the model under repair.

Model	Service Manual	Cassette Mechanism Assembly
KE-1700B/IT		
KE-1700SDK/WG		
KE-1730B/EW		
KE-2700B/IT		
KE-2700SDK/WG		
KE-2730B/EW		
KE-1700QR/UC		
KE-2303QR/UC	CRT1327	EXK1710
KE-2750QR/ES		
KE-2033/UC		
KE-2033/XSG/UC	CRT1331	EXK1710
KE-2828/XSG/UC		
KE-2828/ES, UC		
KE-3838/UC, ES		
KE-3838/XSG/UC	CRT1332	EXK1710
KE-3838/XML/UC		
KE-1700B/XML/IT	CRT1336	EXK1710
KE-1730B/XIB		
KE-1730B/XML/EW	CRT1337	EXK1710
KE-1730B/XSG/EW		
KE-2630B/XIB		
KE-2730B/XIB	CRT1340	EXK1710

Model	Service Manual	Cassette Mechanism Assembly
KE-1700QR/XML/UC	CRT1339	EXK1710
KE-3700SDK/WG		
KE-3730B/EW	CRT1326	EXK1720
KE-3700B/IT		
KE-2700QR/UC		
KE-3700QR/UC	CRT1327	EXK1720
KE-3750QR/ES		
KE-4848/ES, UC		
KE-4848/XML/UC	CRT1330	EXK1720
KE-4848/XSG/UC		
KE-250/US		
KE-3033/UC	CRT1332	EXK1720
KE-3033/XSG/UC		
KE-3730B/XIB	CRT1338	EXK1720
KE-4500QR/US	CRT1327	EXK1750
KE-350/US	CRT1330	EXK1750

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## 1. DISASSEMBLY

*Note: Always use new washer and E washer at the time of reassembling.*

### ● How to Remove the Belt and Motor

1. Remove screw A fixing the FR lever. (Fig.1)
2. Remove three screws B fixing the sub-chassis unit. Move the unit first in Direction A, then in B direction, and lift it upward for removal. (Fig.2)
3. The belt can now be removed. (Fig.3)
4. Remove two screws C. The motor can be removed. (Fig.3)

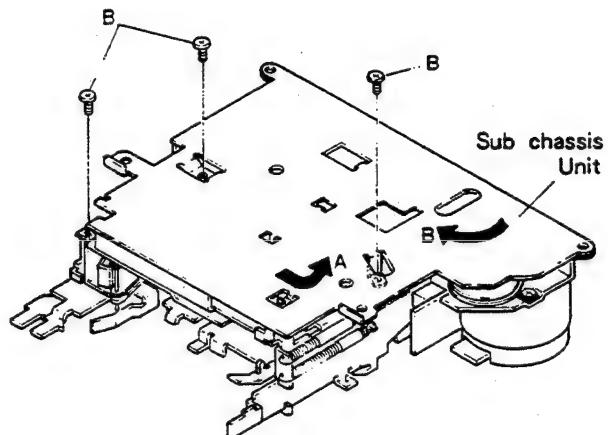


Fig. 2

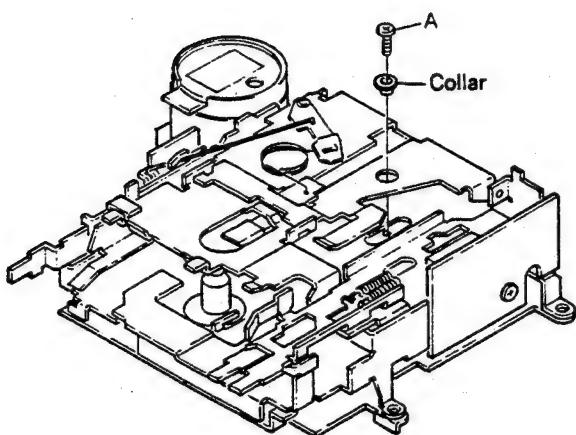


Fig. 1

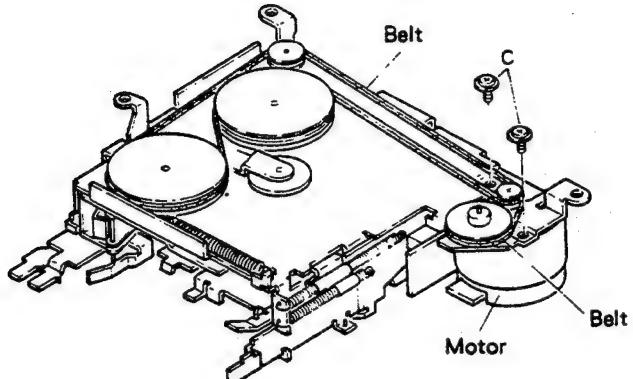


Fig. 3

● How to Remove the Pinch Roller Unit and Head

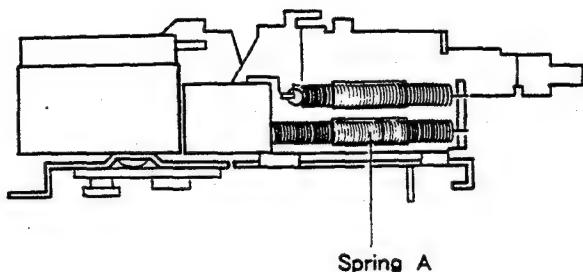


Fig. 4

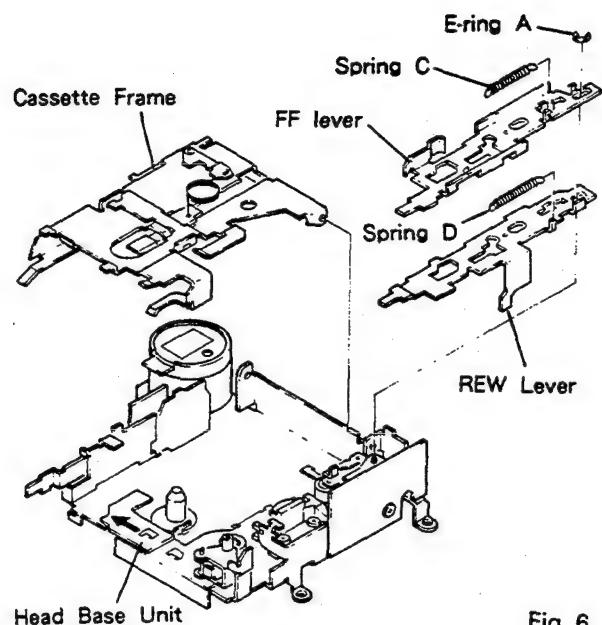


Fig. 6

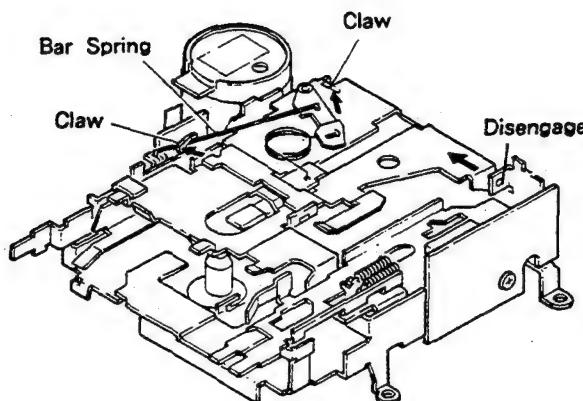


Fig. 5

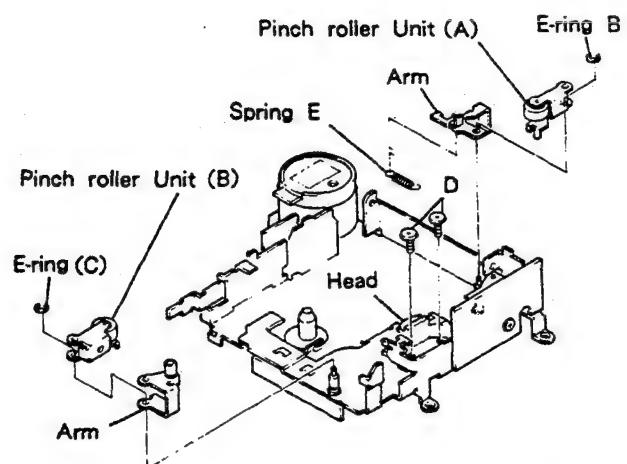


Fig. 7

1. Remove spring A. (Fig.4)
2. Extend claws (2 points). (Fig.5)
3. Remove bar Spring. (Fig.5)
4. Disengage projection by moving in a direction of arrow mark. (Fig.5)
5. The cassette frame is removed. (Fig.6)
6. Remove springs C and D. (Fig.6)
7. Remove E-ring A. (Fig.6)
8. Remove FF/REW levers. (Fig.6)
9. Move head base unit forward. (Fig.6)
10. Remove spring E. (Fig.7)
11. Remove E-ring B. The pinch roller unit (A) can be removed. (Fig.7)
12. Remove E-ring C. The pinch roller unit (B) can be removed. (Fig.7)
13. Remove two screws D. The head can be removed. (Fig.7)

## 2. ADJUSTMENT

### 2.1 CHECK POINTS OF CASSETTE MECHANISM

<p>Confirm the following items when replacing parts of the cassette mechanism.</p>	<ul style="list-style-type: none"> <li>■ Tape speed deviation: 3,000 <math>\frac{+90}{-30}</math> Hz (4.76cm/s <math>\frac{+3}{-1}</math> %)</li> </ul> <p>Using an NCT-111, measure the speed at the start and end of winding and take the maximum value. If values indicated by the pointer vary considerably, adjust to 70% of the minimum and maximum values. Measuring time shall be 5 – 6 seconds.</p>	<ul style="list-style-type: none"> <li>■ Wow and flutter: Less than 0.2% (WRMS)</li> </ul> <p>Using an NCT-111, measure the wow and flutter at the start and end of winding and take the maximum value. If values indicated by the pointer vary considerably, adjust to 70% of the minimum and maximum values. Measuring time shall be 5 – 6 seconds.</p>
<ul style="list-style-type: none"> <li>■ Fast forward and rewinding time: 100 – 120 seconds</li> </ul> <p>Using a C-60, set to fast forward and rewind, and measure the time with a stop watch.</p>	<ul style="list-style-type: none"> <li>■ Winding torque: 35 – 65g · cm</li> </ul> <p>Using a cassette type torque meter (100 g·cm), measure the minimum value while in the play mode. Measuring time shall be 2.5 – 6 seconds.</p>	<ul style="list-style-type: none"> <li>■ F.F. torque: 70 – 120g · cm</li> </ul> <p>Using a cassette type torque meter (120 g·cm), measure the value when the tape stops in the F.F. mode.</p>
<ul style="list-style-type: none"> <li>■ REW torque: 70 – 120g · cm</li> </ul> <p>Using a cassette type torque meter (120 g·cm), measure the value when the tape stops in the REW mode.</p>	<ul style="list-style-type: none"> <li>■ Back tension torque: 2 – 6g · cm</li> </ul> <p>After setting in the REW mode without loading a cassette tape for 5 minutes, measure the back tension torque in the play mode, using a cassette type torque meter.</p>	<ul style="list-style-type: none"> <li>■ Cassette loading force: Less than 0.7 kg</li> </ul> <p>Push the center of the cassette and measure the force with a tension meter (3 kg).</p>

## 2.2 AZIMUTH ADJUSTMENT

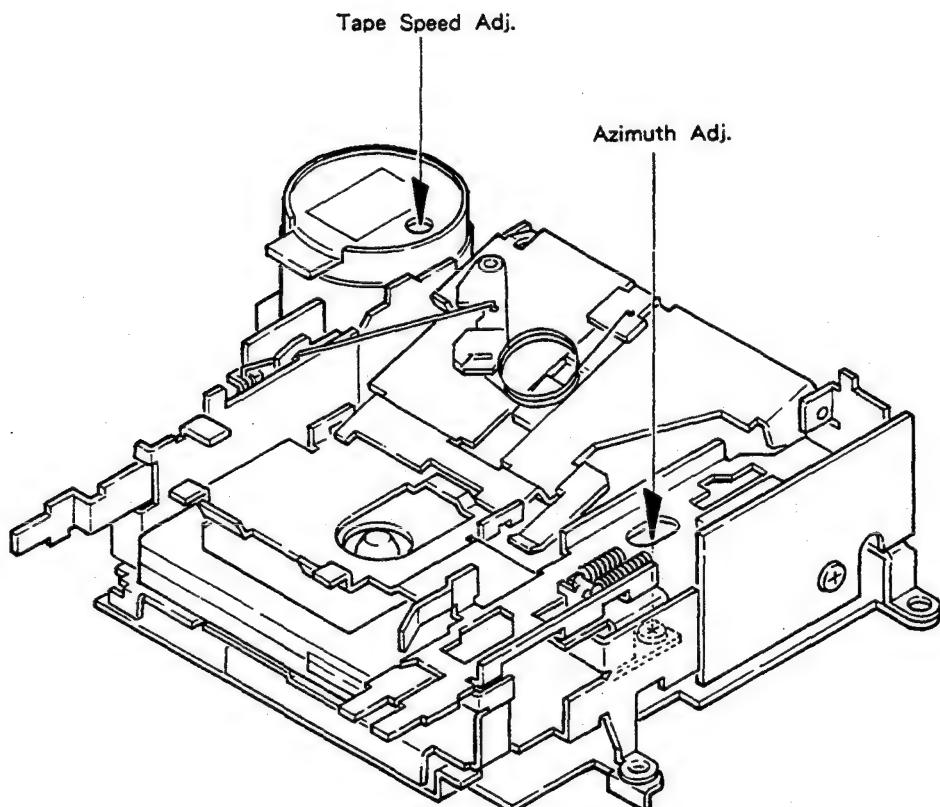


Fig. 8

### ● To Adjust (EXK1750)

1. Play "A" side of NCT-110 (10kHz, - 10dB). Adjust the screw for maximum output in forward and reverse directions.
2. Play "B" side in forward and reverse directions to confirm adjustment.

### 2.3 TAPE SPEED ADJUSTMENT

1. Reproduce NCT-111 (3kHz, - 10dB). Adjust the semifixed resistor so that frequency counter shows 3010Hz (+80Hz, - 40Hz).

### 3. MECHANISM DESCRIPTION

#### ● Loading operation

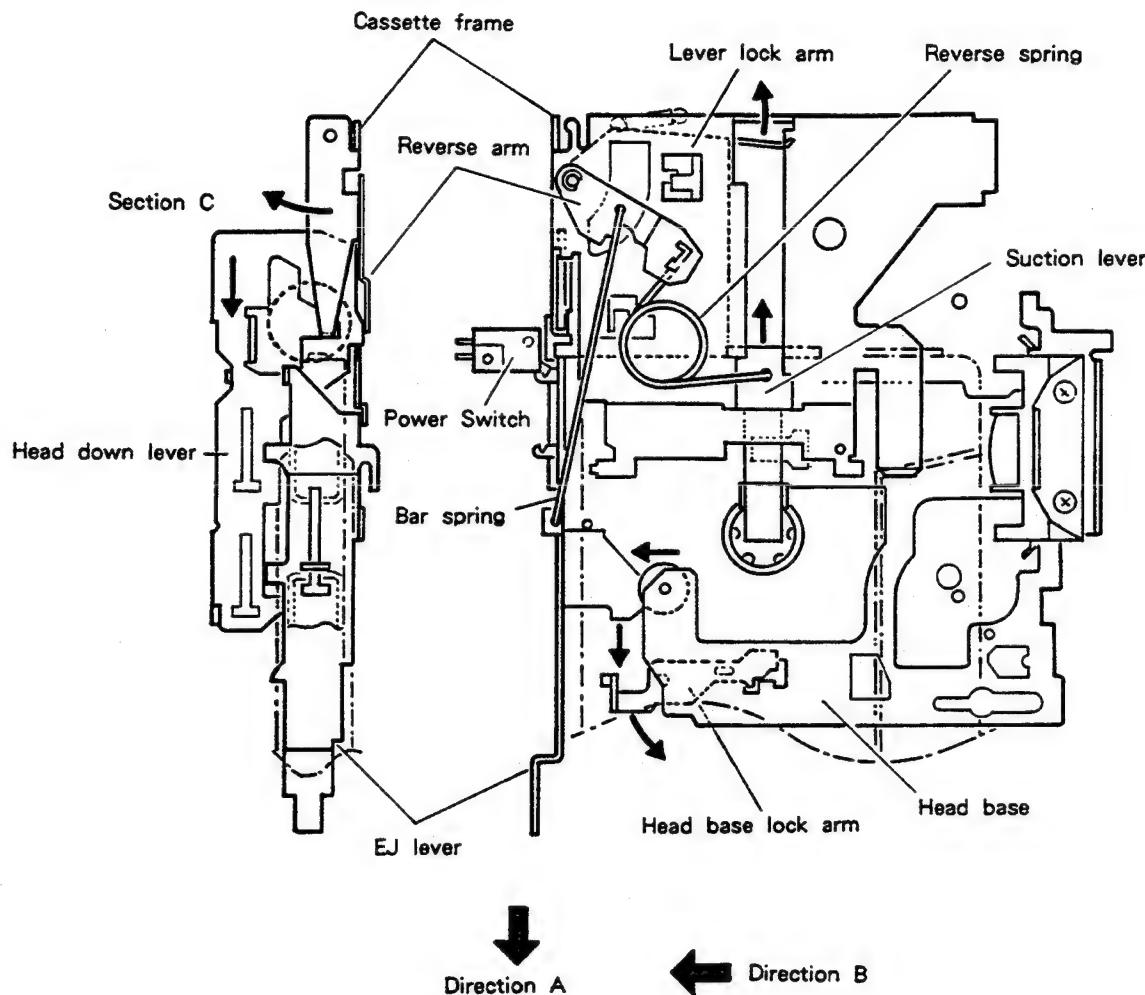


Fig. 9

1. A cassette tape, when inserted, pushes a suction lever. The reverse spring rotates to move past the reverse point. Then, the cassette is drawn by a force of a reverse spring (suction operation).
2. After suction, the lever lock arm is pressed to be unlocked.
3. The head down lever is unlocked and the lever moves in Direction A.
4. While moving, the EJ lever turns ON the power switch.
5. The cassette frame engaged to the section C of the head down lever turns. (Cassette drop operation)
6. At the stroke end, the head down lever turns the head base lock arm.
7. A Stopper of the head base lock arm is released, and the head base moves forward (Direction B).

● MS Operation (EXK1720, EXK1750)

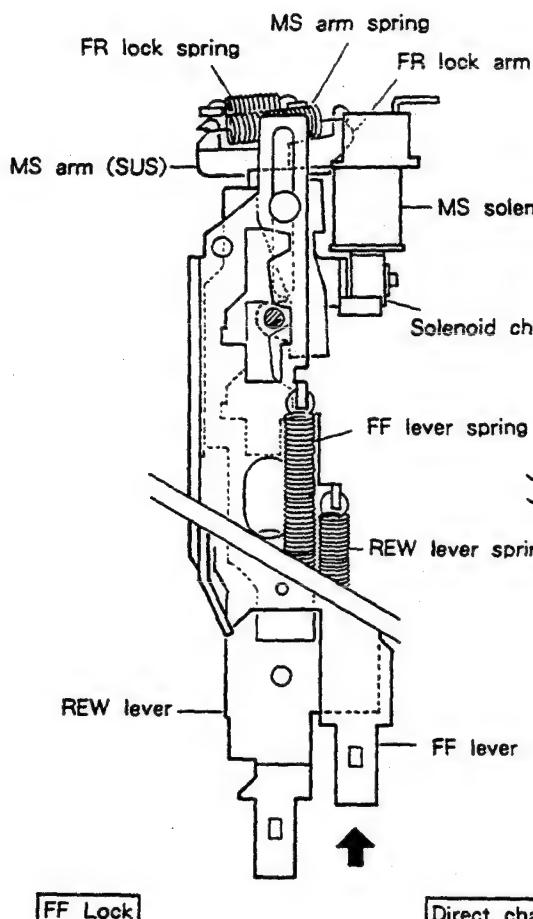


Fig. 10

Direct change

Fig. 11

REW → MS

Fig. 12

1. The MS solenoid is normally energized to attract the solenoid chip during play and F/R operation. The solenoid chip applies counterclockwise force to the MS arm, thereby putting the FR lock arm into rotation via the MS arm spring. The MS lock shaft of FR lock arm unit catches a taper in a different hole of the FF (or REW) lever to lock the FF (or REW) lever.
2. In case of direct change, pressing the unlocked FF or REW lever causes the lever taper to turn the FR lock arm clockwise. This in turn presses the MS arm spring and FR lock spring to release the locked lever.
3. When the no recording section is caught and the power supply to the solenoid is cut off, the solenoid loses the attraction force and disables locking of the F/R lever. As a result, the F/R lever is unlocked. (This unlocking occurs because the force to retain the lever cannot be generated by the FR lock spring only.)

● Direction Changeover Operation

(1) FWD play operation

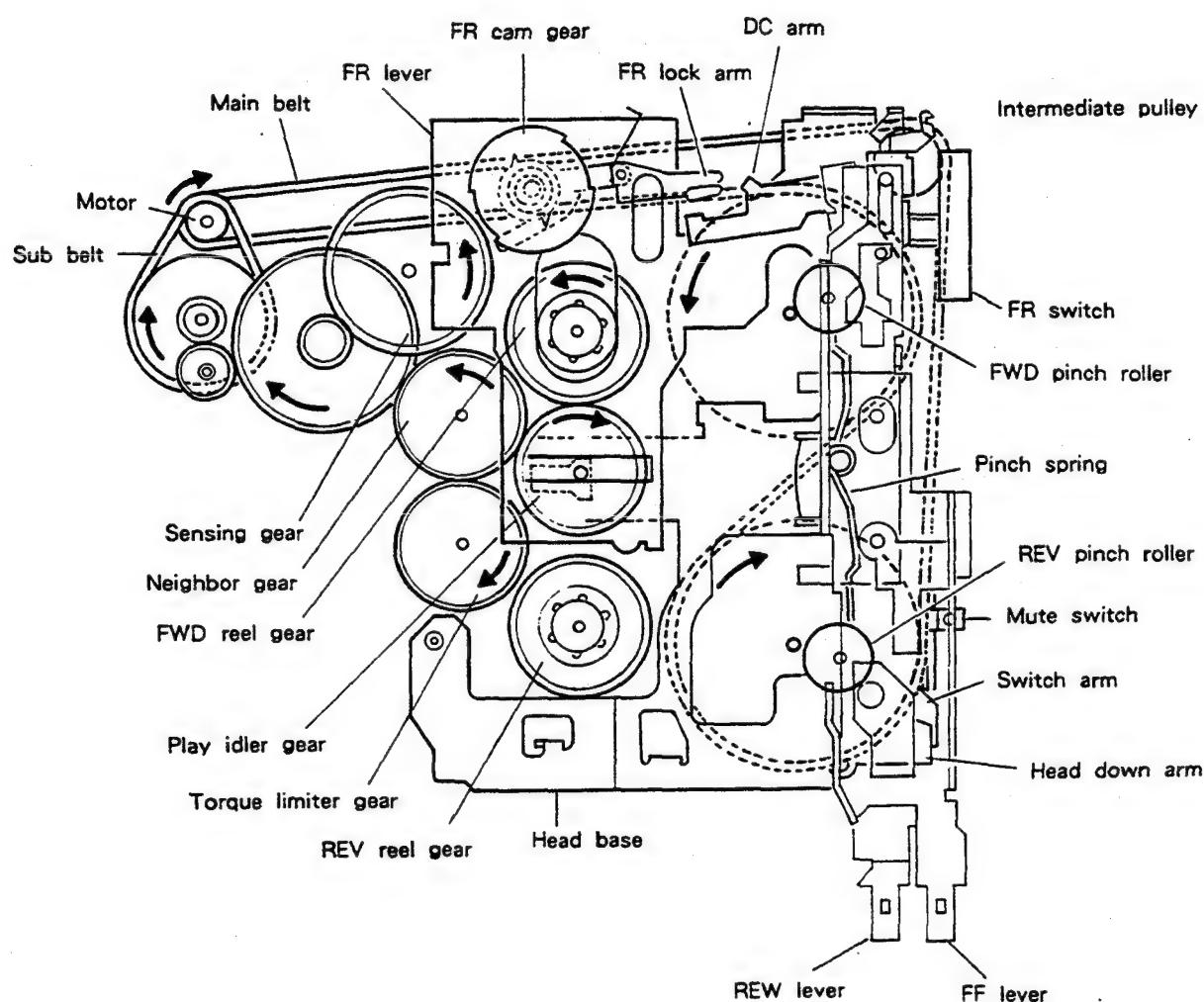


Fig. 13

When the FR lever is in the top position, the pinch spring is in the upper position to press the FWD pinch roller. The FR switch also moves upward and its reaction causes downward force on the FR lever. The spring attached to the FR lever applies upward force to the play idler gear from above to engage it with the neighbor gear and FWD reel gear.

The tape is driven in the FWD direction by a running motor and taken up by the REV reel gear via the torque limiter gear.

(2) Direction change operation

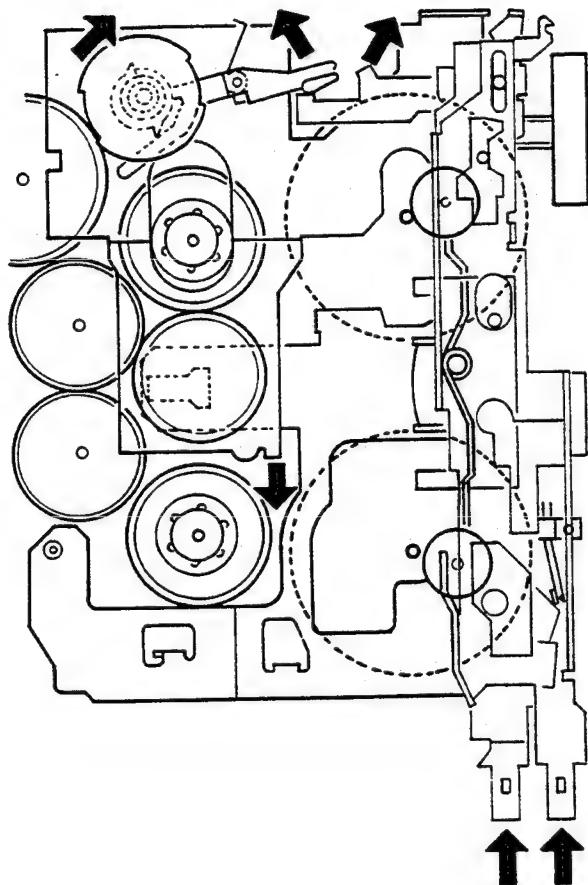


Fig. 14

(3) REV play operation

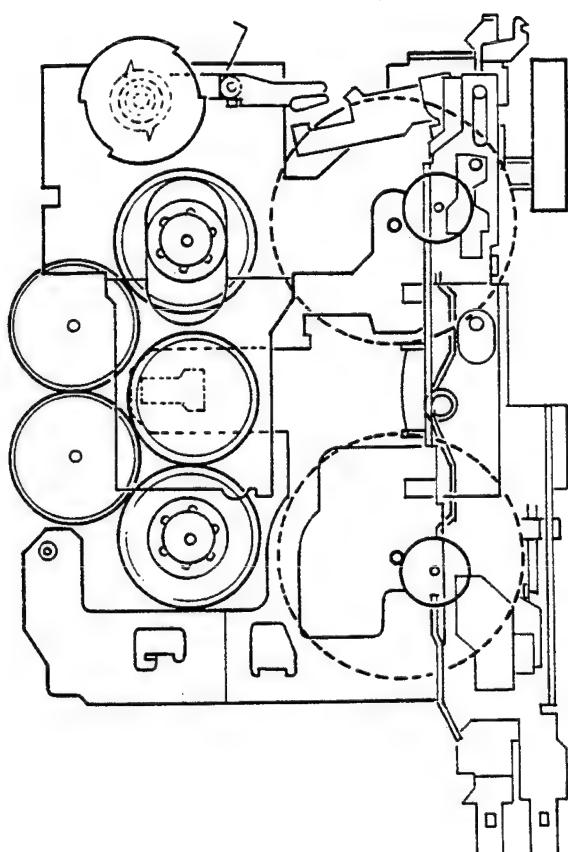


Fig. 15

The direction is changed by pressing FF and REW levers simultaneously. The DC arm turns along a cam groove of FF and REW levers to turn the FR lock arm. As the FR lever applies force from above downward, the FR cam gear turns and the notch meshes with the sensing gear.

As a result, the FR lever moves downward.

When FF and REW levers are kept pressed, the lock arm contacts the outside of the FR cam gear to prevent changeover between FWD and REV. Pressing FF and REW levers also cause the mute switch to be turned ON. In other words, muting is valid while FF and REW levers are pressed. (Fig.14)

Moving the NR lever up and down causes changeover among the pinch roller, FR switch, and play idler gear. With FF and REW levers having been returned, the FR lock arm returns to the normal lock position and locks the gear when the FR gear completes an one-half turn. The mute arm also returns to turn OFF the mute switch. The reverse play state is thus obtained. (The same applies to changeover from REV to FWD.)

● FF/REW Operation

(1) FWD play operation

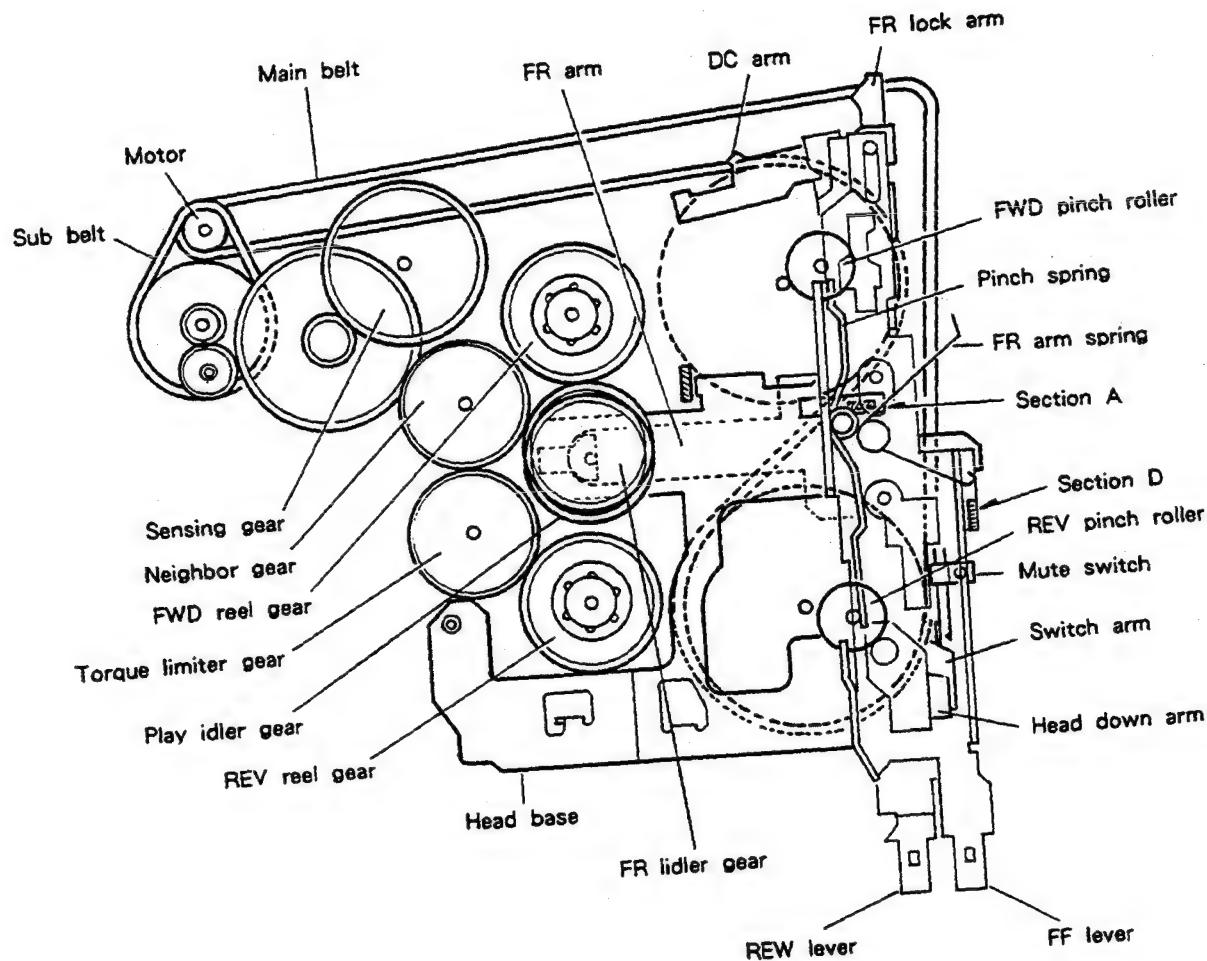
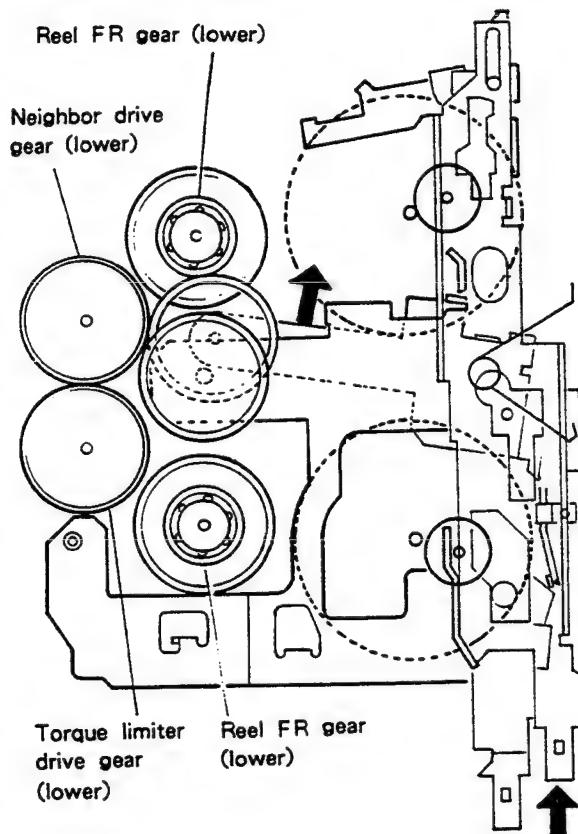


Fig. 16

In the FWD (REV) play state, the head base is fixed by a chassis stopper. The pinch spring presses the pinch roller into contact with a capstan to drive forward the tape. The REV reel gear takes up the tape via the torque limiter gear. In this case, the FR idler gear on the FR arm is centered by Section A of the head base and thus not rotating.

(2) FF Operation



(3) REW operation

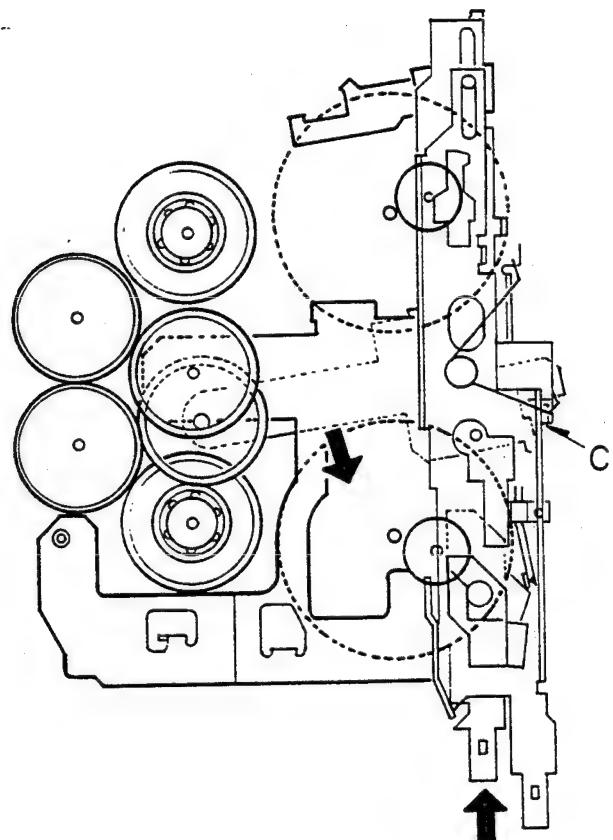


Fig. 17

Fig. 18

FF operation is obtained by pressing and locking the FF lever. As the FF lever is pressed, the switch arm turns to turn ON the mute switch. The head base is moved backward along the FF lever cam groove.

As the head base moves backward to release the pinch roller from the capstan, the play idler gear is simultaneously disengaged from the reel gear. As the head base moves backward, the FR arm centered by Section A is put into rotation by the FR arm spring to engage with the FWD side FR gear.

The FF lever is locked by the FR lock arm and performs the FF operation. (Fig.17)

Similar to the case of FF operation, pressing the REW lever causes the mute switch to be turned ON.

Simultaneously with release of the pinch roller from the capstan, the play idler gear is disengaged from the reel gear.

Section D of the REW lever presses a movable side of the FR arm spring, thereby engaging the FR gear to the FR gear on the REV side.

The REW lever is locked by the lock arm, performing the REW operation. This operation is cancelled when Section C is turned by the lever return spring. (Fig.18)

● Sensing Operation

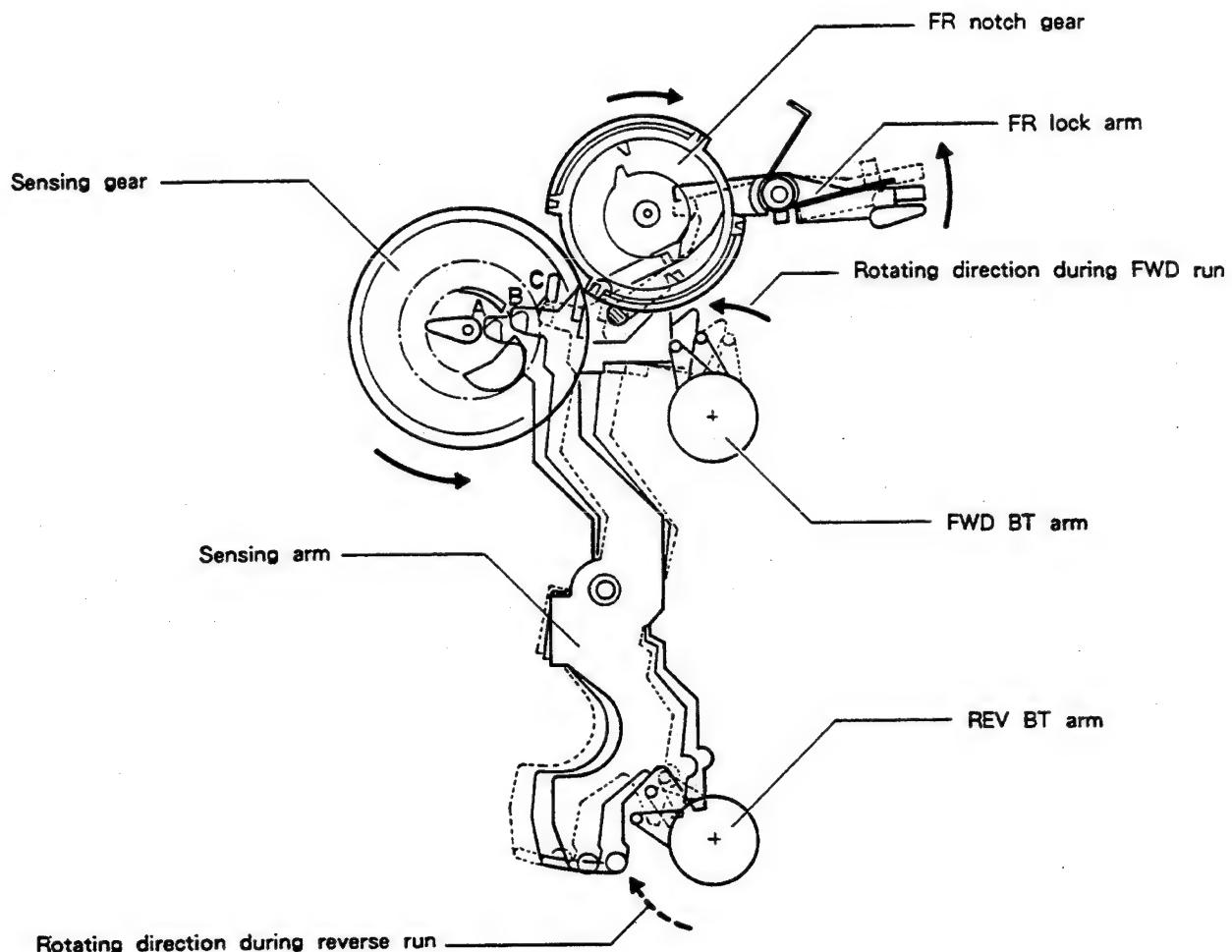


Fig. 19

1. During tape run: The sensing arm keeps oscillation between A and B under a force of the FWD BT arm (or REV BT arm).
2. At end of tape: The force of the BT arm is lost. The sensing arm stops at Position B, then pushed out to Position C by a crescent cam of the sensing gear.

3. Change of run direction:  
The FR lock arm turns counter-clockwise along with movement of the sensing arm. The FR notch gear is unlocked and begins to turn.

● ATSC Operation

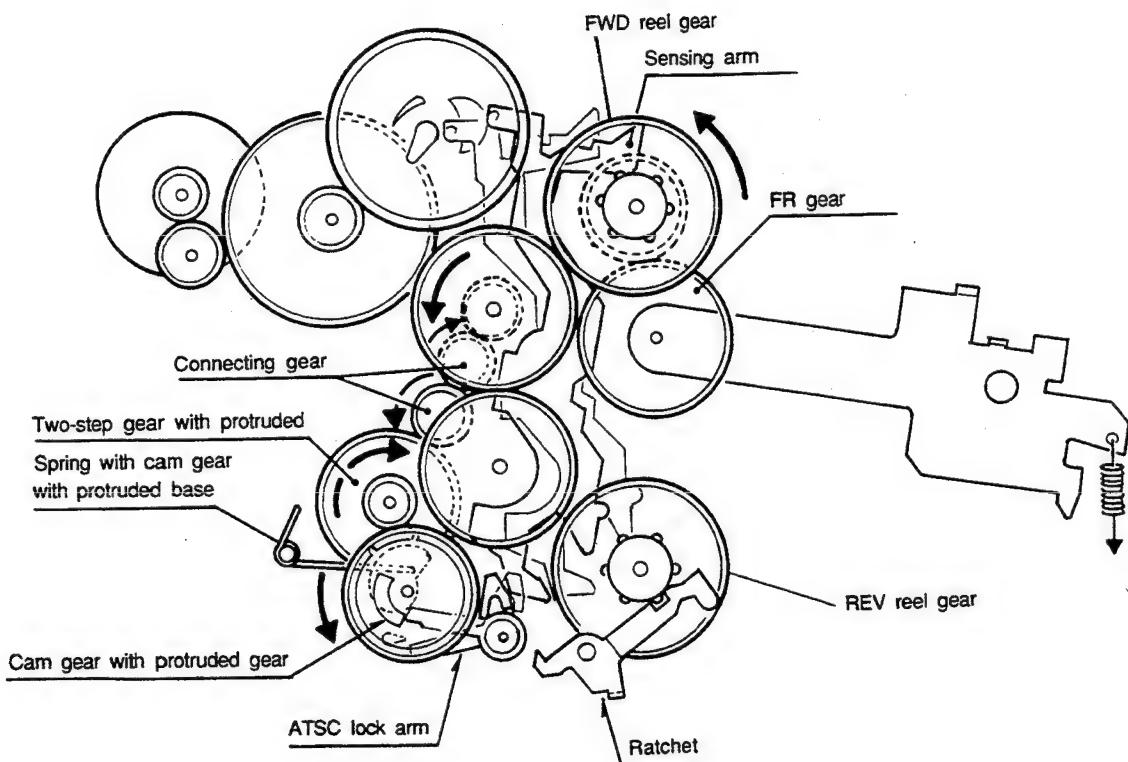
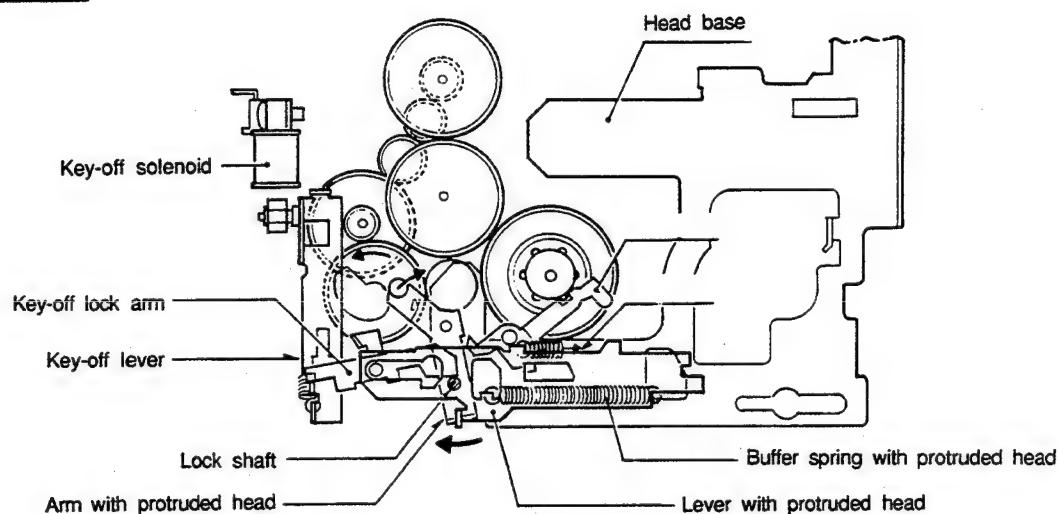


Fig. 18

1. At the position for releasing the head table, the FR gear is meshed with the FWD reel gear. Because the ratchet in the REV reel gear stops rotating, the tape must be wound up until no slack exist.
2. Because the rotation stops when no slack exists in the tape, sensing is performed. The sensing arm presses the ATSC lock arm, and the lock of the cam gear with protruded head gets out of position. Then, the cam gear is made to rotate.

● Key-off Operation

**Release Condition**



**Play Condition**

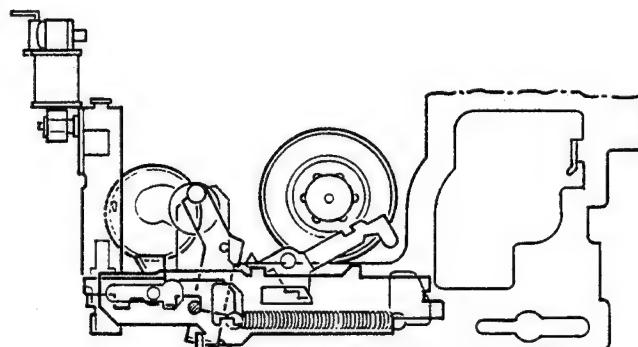


Fig. 19

1. Thrusting head: The arm with protruded head is rotated by the rotation of the cam gear with protruded head, and the lever with protruded head is pushed out. Because the lever with the protruded head and head base are connected by the buffer spring with protruded head, the head base moves forward.

2. Lock for head base:

When the lever with protruded head moves forward, the lock shaft caulked by the lever with protruded head shifts. Thus, the key-off lock arm can rotate, and the key-off lever reaches the key-off solenoid

by force of a spring, and becomes attached. (Although escape power works on the key-off lock arm by force of the head return spring, the solenoid maintains it.)

3. Key-off:

The key-off lock arm is rotated by the power of the head return spring when the key-off solenoid is switched off, and the lever with protruded head and head base move back together.

● EJECT Operation

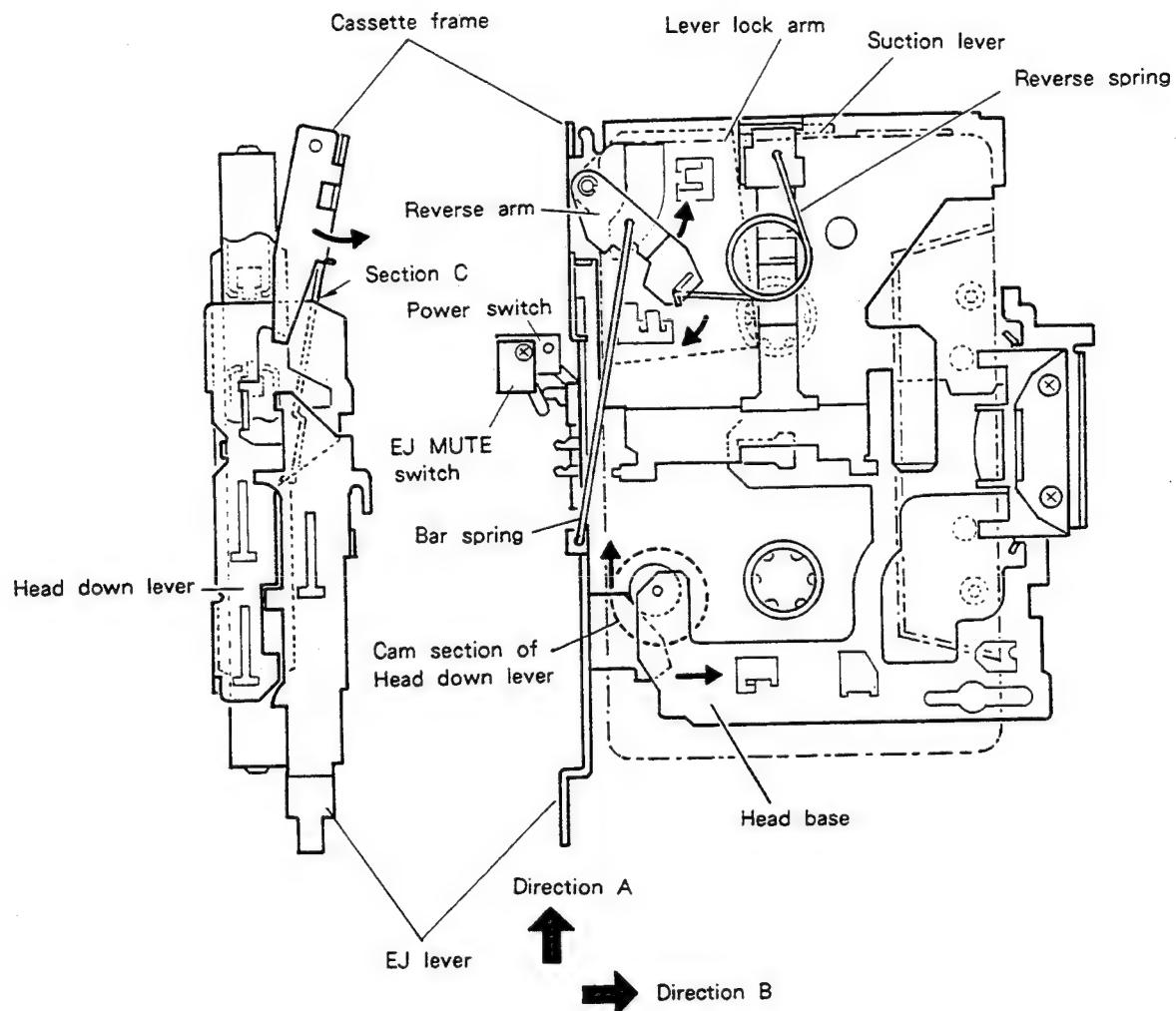


Fig. 20

1. Push the EJ lever in Direction A by hand (EJ MUTE SW ON) At the same time, the head down lever slides in Direction A.
2. The cam section of the head down lever returns the head base in Direction B (head base down operation).
3. Section C of the cassette frame is pushed up by the stroke of the head down lever (push-up operation).
4. The reverse arm is driven in a direction of arrow mark via bar spring by the EJ lever stroke.
5. The reverse spring passes through the reverse position to eject the cassette tape (eject operation).
6. With the EJ lever over-stroking, the lever lock arm can be rotated and locks the head down lever.
7. When released, the EJ lever returns and is stopped by the head down lever.



## ***ADDITIONAL***



二〇三

# *Service Manual*

ORDER NO.  
**CRT1428**

## CASSETTE MECHANISM ASSEMBLY

# CX-197

**NOTE**

- This service manual describes operation of the cassette mechanism incorporated in models listed in the table below.
  - When performing repairs use this manual together with the specific manual for the model under repair.
  - CX197 (CRT1328) does not have a Key-off function, but the key-off function is shown in this service manual of the CX-197 (CRT1428).

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2. Remove three screws B fixing the sub-chassis unit. Move the unit first in Direction A, then in B direction, and lift it upward for removal. (Fig.2)
3. The belt can now be removed. (Fig.3)
4. Remove two screws C. The motor can be removed. (Fig.3)

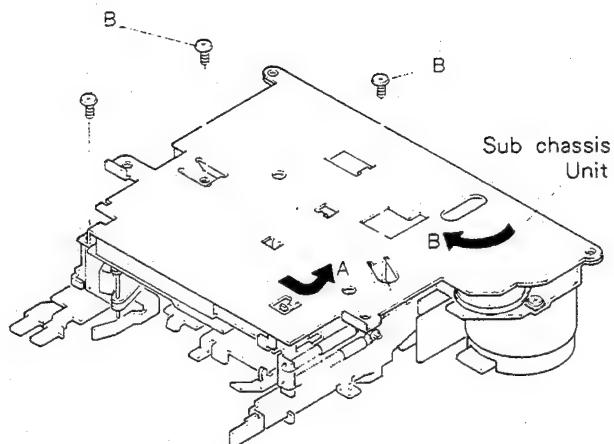


Fig. 2

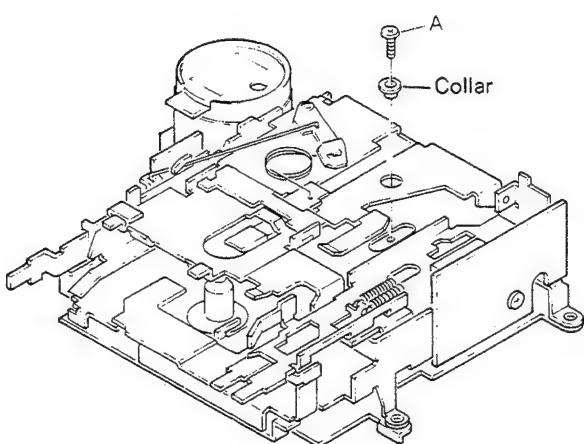


Fig. 1

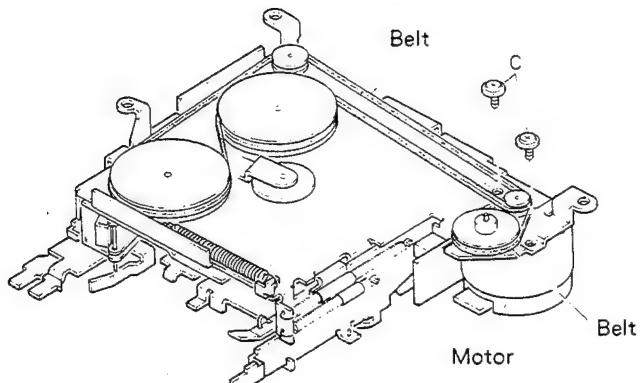
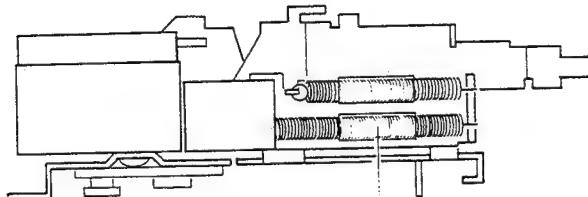


Fig. 3

● How to Remove the Pinch Roller Unit and Head



Spring A

Fig. 4

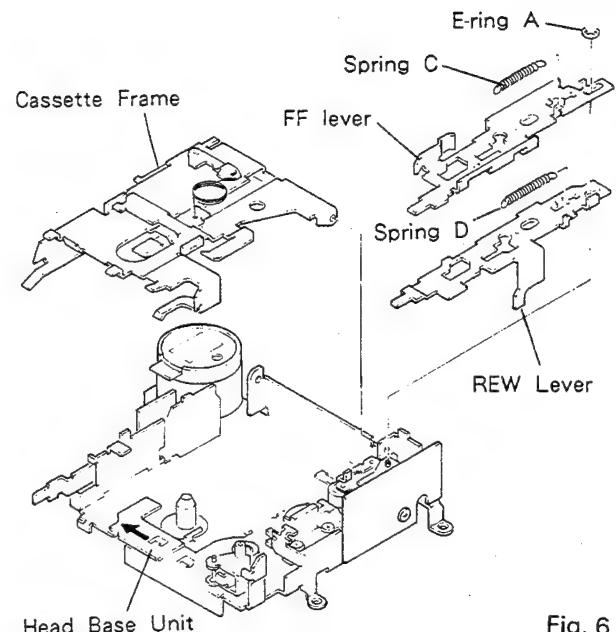


Fig. 6

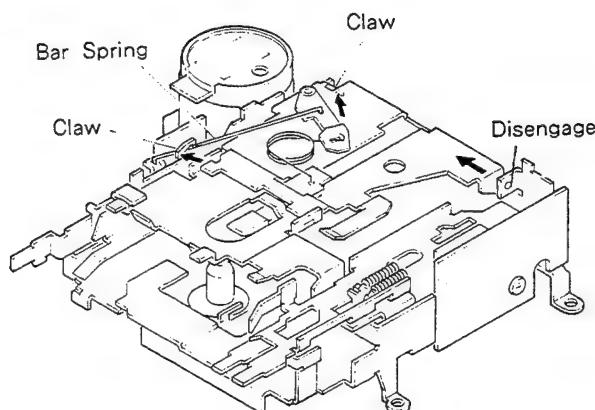


Fig. 5

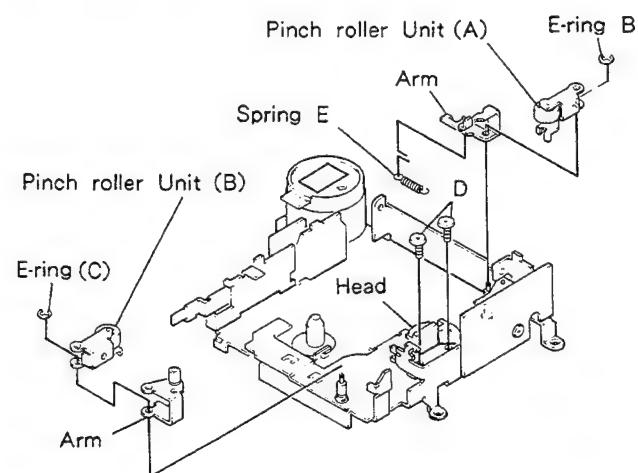


Fig. 7

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2. Extend claws (2 points). (Fig.5)
3. Remove bar Spring. (Fig.5)
4. Disengage projection by moving in a direction of arrow mark. (Fig.5)
5. The cassette frame is removed. (Fig.6)
6. Remove springs C and D. (Fig.6)
7. Remove E-ring A. (Fig.6)
8. Remove FF/REW levers. (Fig.6)

9. Move head base unit forward. (Fig.6)
10. Remove spring E. (Fig.7)
11. Remove E-ring B. The pinch roller unit (A) can be removed. (Fig.7)
12. Remove E-ring C. The pinch roller unit (B) can be removed. (Fig.7)
13. Remove two screws D. The head can be removed. (Fig.7)

## 2. ADJUSTMENT

### 2.1 CHECK POINTS OF CASSETTE MECHANISM

<p>Confirm the following items when replacing parts of the cassette mechanism.</p>	<ul style="list-style-type: none"> <li>■ Tape speed deviation: 3,000 <math>\frac{+90}{-30}</math> Hz (4.76cm/s <math>\frac{+3}{-1}</math> %)</li> </ul> <p>Using an NCT-111, measure the speed at the start and end of winding and take the maximum value. If values indicated by the pointer vary considerably, adjust to 70% of the minimum and maximum values. Measuring time shall be 5 – 6 seconds.</p>	<ul style="list-style-type: none"> <li>■ Wow and flutter: Less than 0.2% (WRMS)</li> </ul> <p>Using an NCT-111, measure the wow and flutter at the start and end of winding and take the maximum value. If values indicated by the pointer vary considerably, adjust to 70% of the minimum and maximum values. Measuring time shall be 5 – 6 seconds.</p>
<ul style="list-style-type: none"> <li>■ Fast forward and rewinding time: 100 – 120 seconds</li> </ul> <p>Using a C-60, set to fast forward and rewind, and measure the time with a stop watch.</p>	<ul style="list-style-type: none"> <li>■ Winding torque: 35 – 65g · cm</li> </ul> <p>Using a cassette type torque meter (100 g·cm), measure the minimum value while in the play mode. Measuring time shall be 2.5 – 6 seconds.</p>	<ul style="list-style-type: none"> <li>■ F.F. torque: 70 – 120g · cm</li> </ul> <p>Using a cassette type torque meter (120 g·cm), measure the value when the tape stops in the F.F. mode.</p>
<ul style="list-style-type: none"> <li>■ REW torque: 70 – 120g · cm</li> </ul> <p>Using a cassette type torque meter (120 g·cm), measure the value when the tape stops in the REW mode.</p>	<ul style="list-style-type: none"> <li>■ Back tension torque: 2 – 6g · cm</li> </ul> <p>After setting in the REW mode without loading a cassette tape for 5 minutes, measure the back tension torque in the play mode, using a cassette type torque meter.</p>	<ul style="list-style-type: none"> <li>■ Cassette loading force: Less than 0.7 kg</li> </ul> <p>Push the center of the cassette and measure the force with a tension meter (3 kg).</p>

## 2.2 AZIMUTH ADJUSTMENT

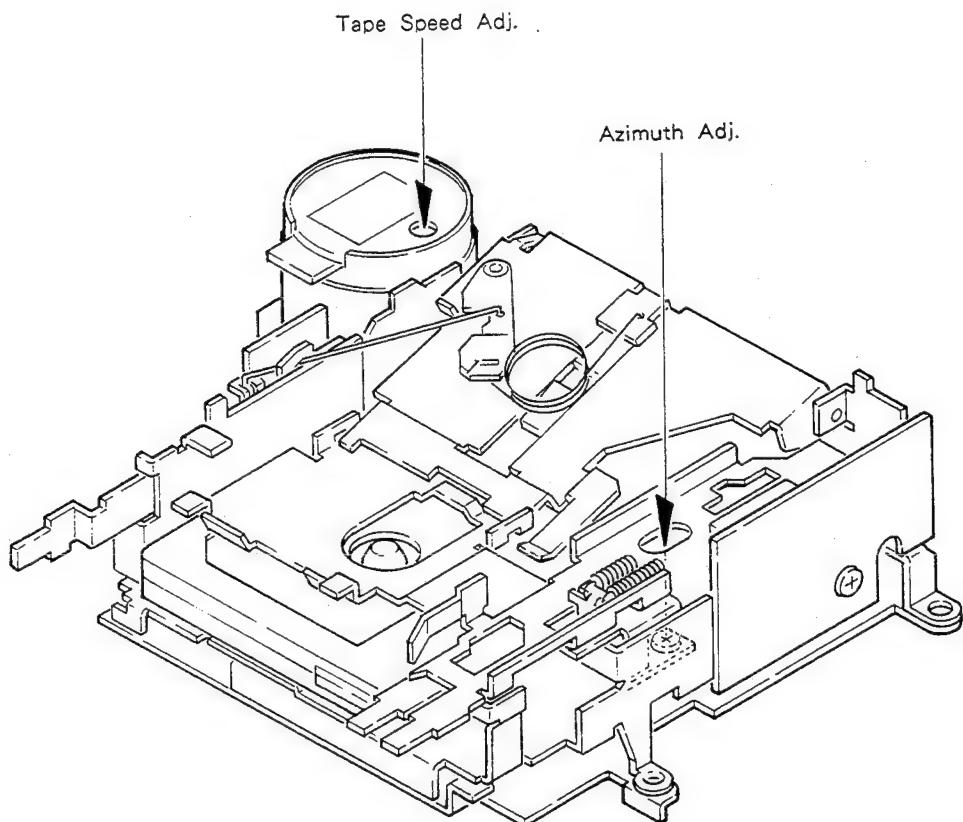


Fig. 8

### ● To Adjust (EXK1750)

1. Play "A" side of NCT-110 (10kHz, -10dB). Adjust the screw for maximum output in forward and reverse directions.
2. Play "B" side in forward and reverse directions to confirm adjustment.

### 2.3 TAPE SPEED ADJUSTMENT

1. Reproduce NCT-111 (3kHz, -10dB). Adjust the semifixed resistor so that frequency counter shows 3010Hz (+80Hz, -40Hz).

### 3. MECHANISM DESCRIPTION

#### ● Loading operation

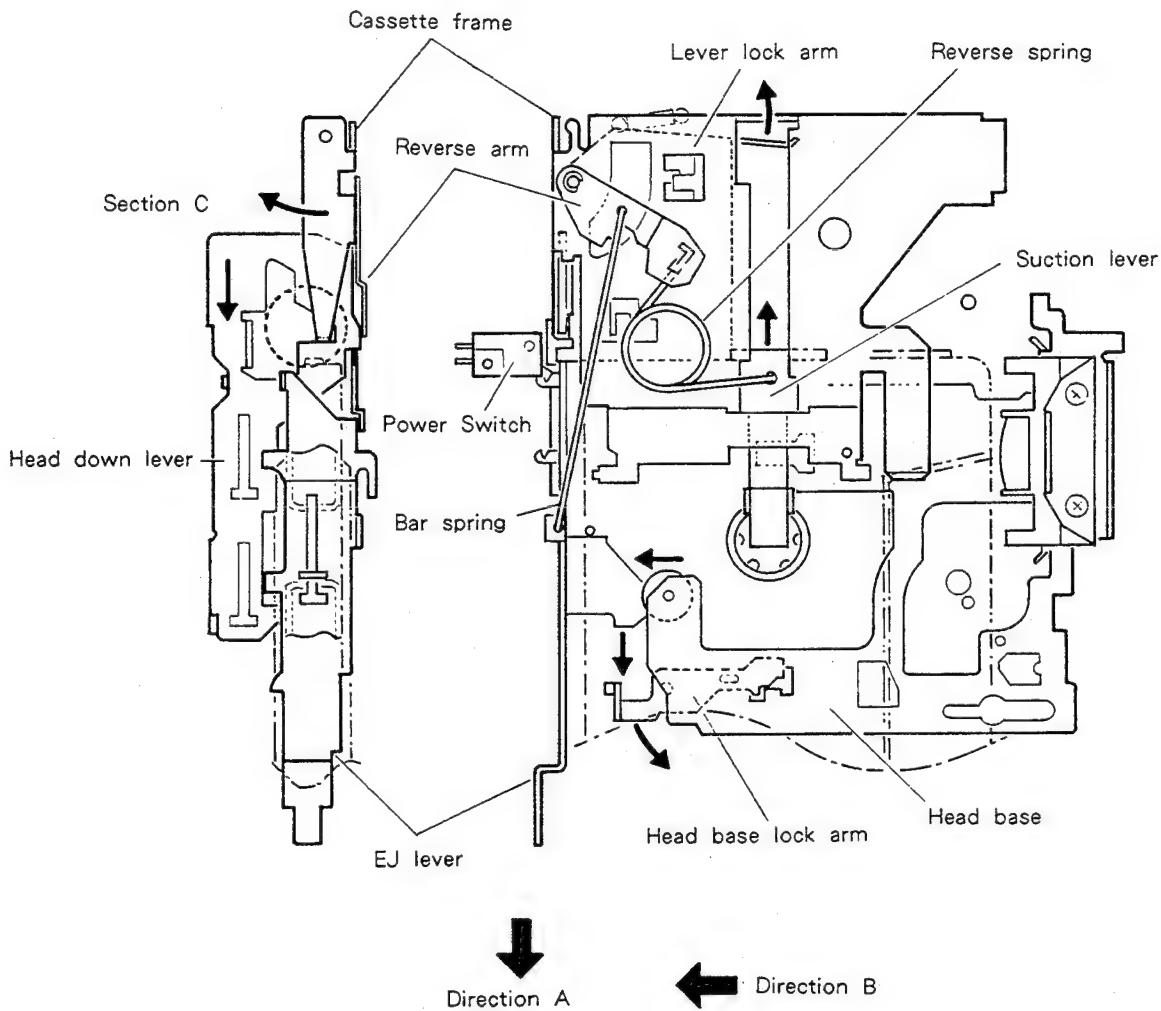


Fig. 9

1. A cassette tape, when inserted, pushes a suction lever. The reverse spring rotates to move past the reverse point. Then, the cassette is drawn by a force of a reverse spring (suction operation).
2. After suction, the lever lock arm is pressed to be unlocked.
3. The head down lever is unlocked and the lever moves in Direction A.
4. While moving, the EJ lever turns ON the power switch.
5. The cassette frame engaged to the section C of the head down lever turns. (Cassette drop operation)
6. At the stroke end, the head down lever turns the head base lock arm.
7. A Stopper of the head base lock arm is released, and the head base moves forward (Direction B).

● MS Operation

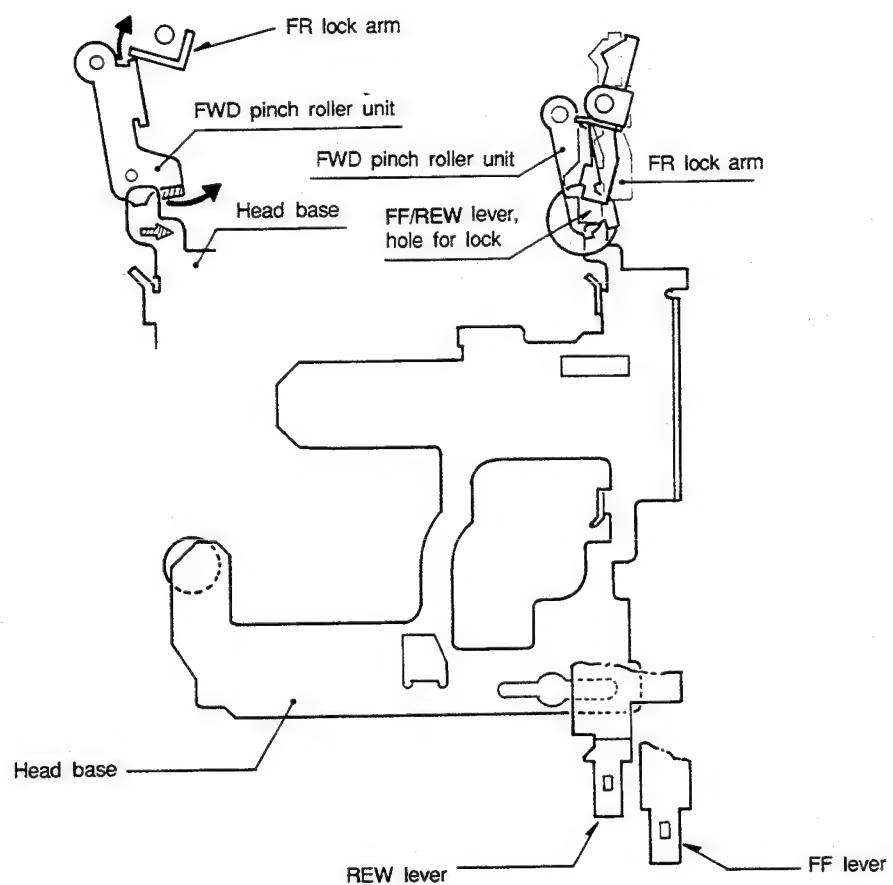


Fig. 10

The head base is moved back by switching the key-off solenoid off from the REW or FF condition, and is lowered (rotated) FWD pinch roller unit. The FWD pinch roller unit presses the bending part of FR lock arm to make it rotate in the direction that releases the lock. The lock of the FF/REW lever is consequently released.

Subsequently, the head comes out from the ATSC to enable PLAY condition.

● Direction Changeover Operation

(1) FWD play operation

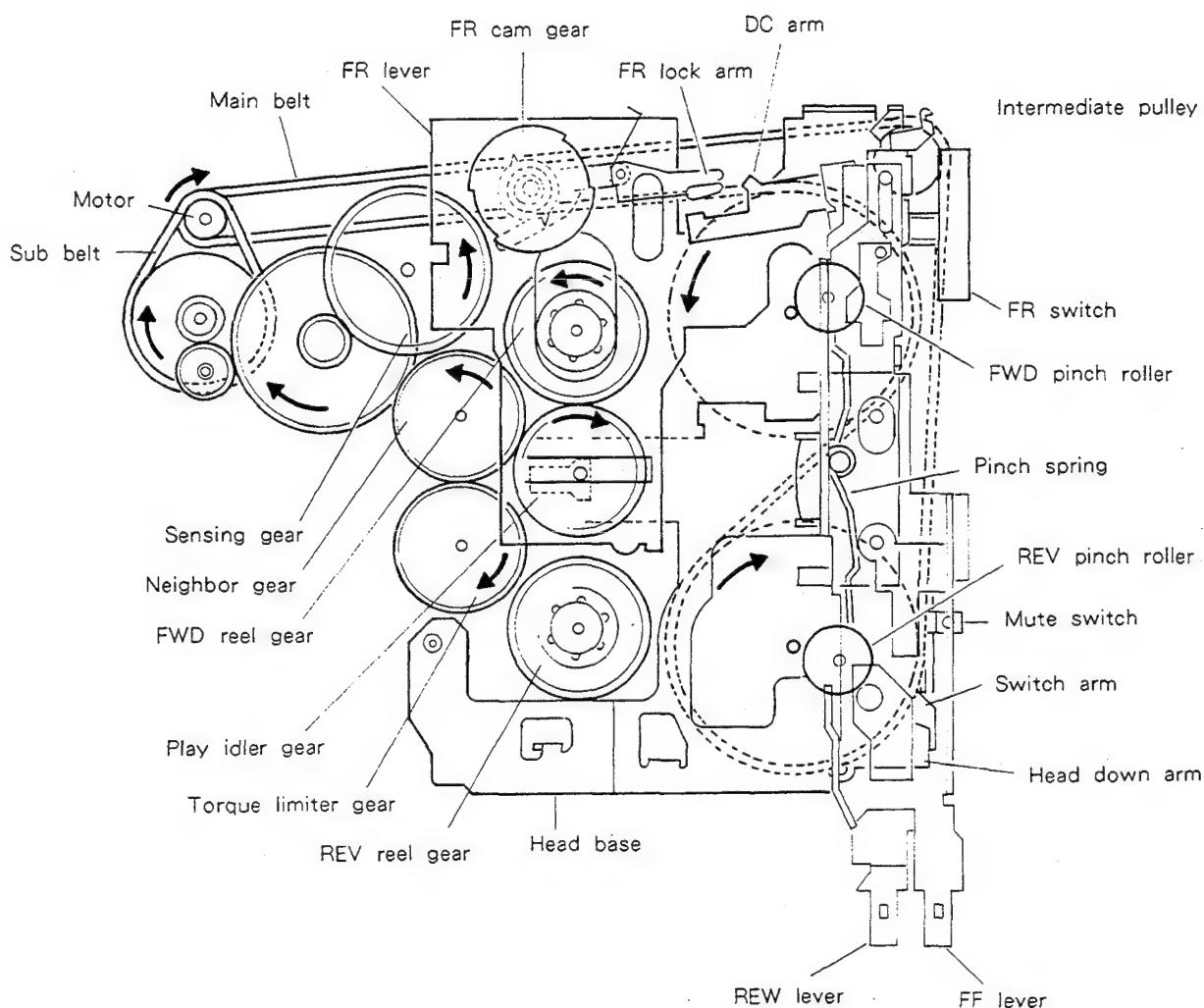


Fig. 11

When the FR lever is in the top position, the pinch spring is in the upper position to press the FWD pinch roller. The FR switch also moves upward and its reaction causes downward force on the FR lever. The spring attached to the FR lever applies upward force to the play idler gear from above to engage it with the neighbor gear and FWD reel gear.

The tape is driven in the FWD direction by a running motor and taken up by the REV reel gear via the torque limiter gear.

(2) Direction change operation

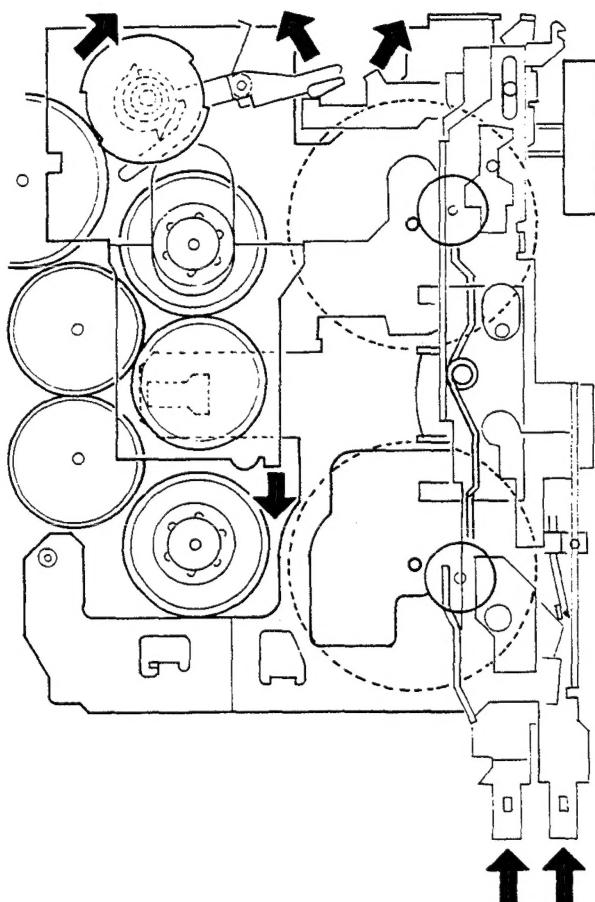


Fig. 12

(3) REV play operation

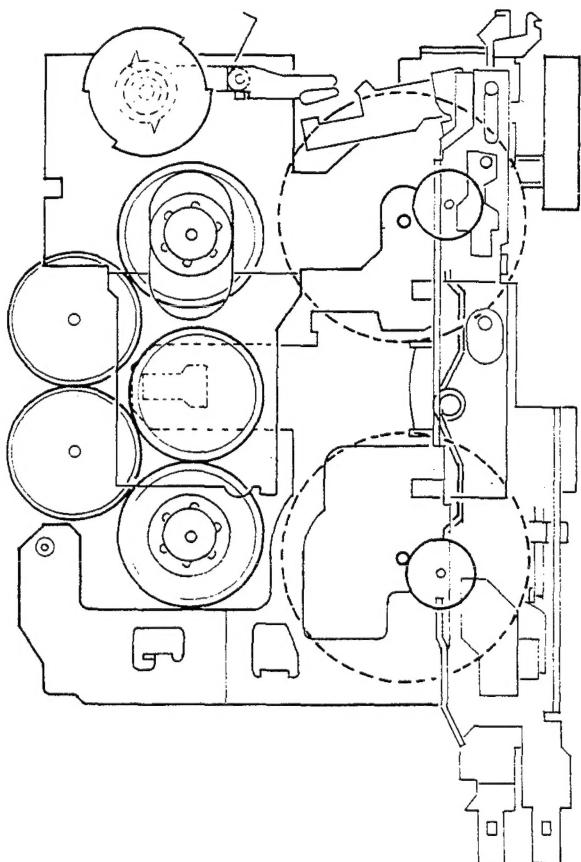


Fig. 13

The direction is changed by pressing FF and REW levers simultaneously. The DC arm turns along a cam groove of FF and REW levers to turn the FR lock arm. As the FR lever applies force from above downward, the FR cam gear turns and the notch meshes with the sensing gear. As a result, the FR lever moves downward.

When FF and REW levers are kept pressed, the lock arm contacts the outside of the FR cam gear to prevent changeover between FWD and REV. Pressing FF and REW levers also cause the mute switch to be turned ON. In other words, muting is valid while FF and REW levers are pressed. (Fig.12)

Moving the NR lever up and down causes changeover among the pinch roller, FR switch, and play idler gear. With FF and REW levers having been returned, the FR lock arm returns to the normal lock position and locks the gear when the FR gear completes an one-half turn. The mute arm also returns to turn OFF the mute switch. The reverse play state is thus obtained. (The same applies to changeover from REV to FWD.)

● FF/REW Operation

(1) FWD play operation

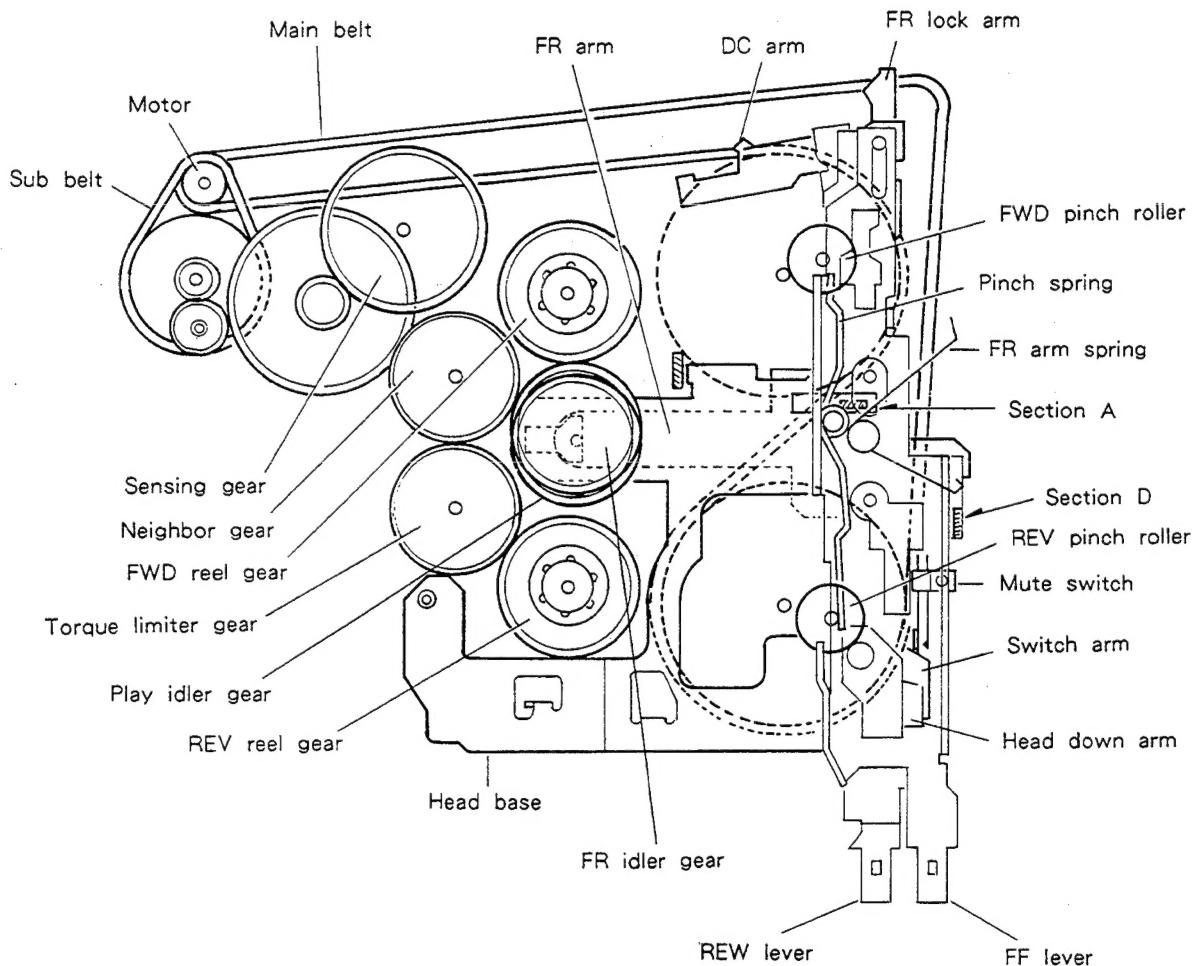
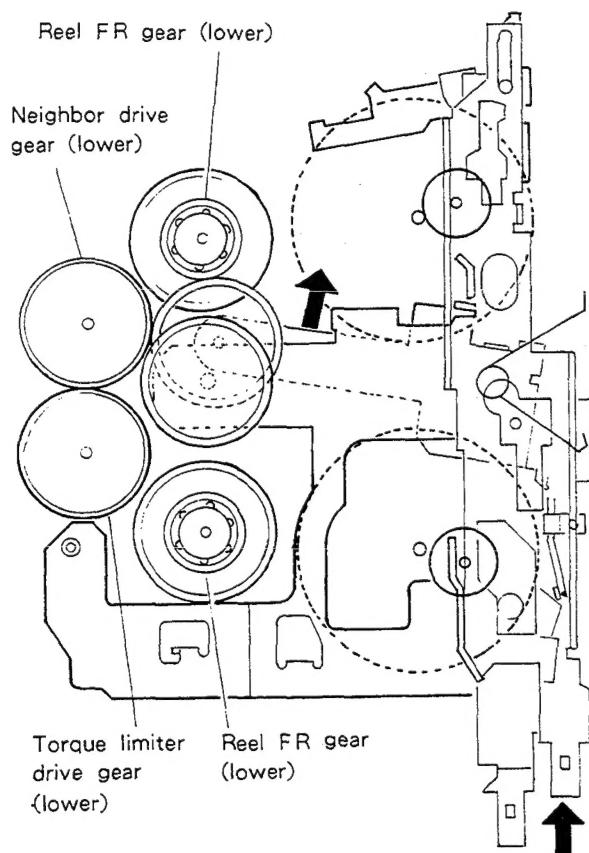


Fig. 14

In the FWD (REV) play state, the head base is fixed by a chassis stopper. The pinch spring presses the pinch roller into contact with a capstan to drive forward the tape. The REV reel gear takes up the tape via the torque limiter gear. In this case, the FR idler gear on the FR arm is centered by Section A of the head base and thus not rotating.

## (2) FF Operation



## (3) REW operation

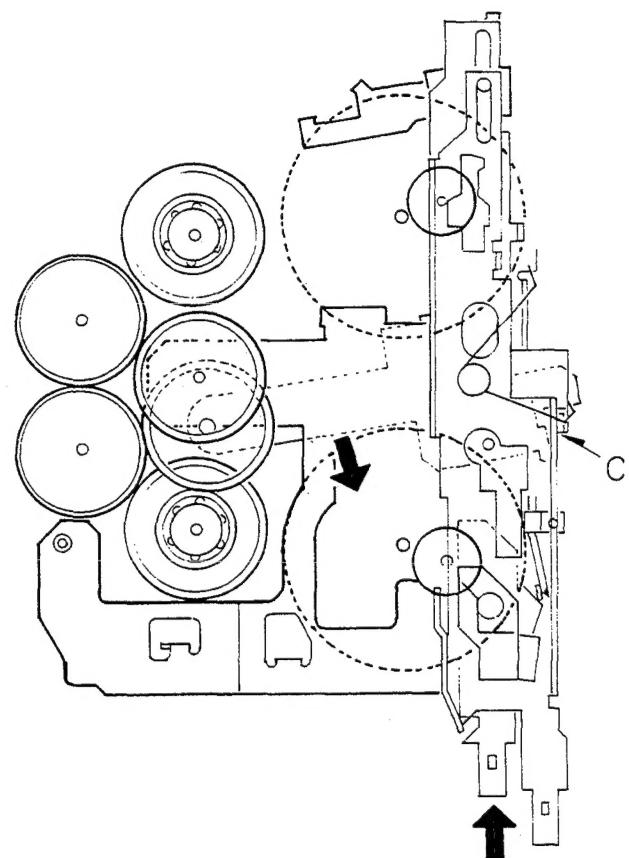


Fig. 15

Fig. 16

FF operation is obtained by pressing and locking the FF lever. As the FF lever is pressed, the switch arm turns to turn ON the mute switch. The head base is moved backward along the FF lever cam groove.

As the head base moves backward to release the pinch roller from the capstan, the play idler gear is simultaneously disengaged from the reel gear. As the head base moves backward, the FR arm centered by Section A is put into rotation by the FR arm spring to engage with the FWD side FR gear.

The FF lever is locked by the FR lock arm and performs the FF operation. (Fig.15)

Similar to the case of FF operation, pressing the REW lever causes the mute switch to be turned ON.

Simultaneously with release of the pinch roller from the capstan, the play idler gear is disengaged from the reel gear.

Section D of the REW lever presses a movable side of the FR arm spring, thereby engaging the FR gear to the FR gear on the REV side.

The REW lever is locked by the lock arm, performing the REW operation. This operation is cancelled when Section C is turned by the lever return spring. (Fig.16)

● Sensing Operation

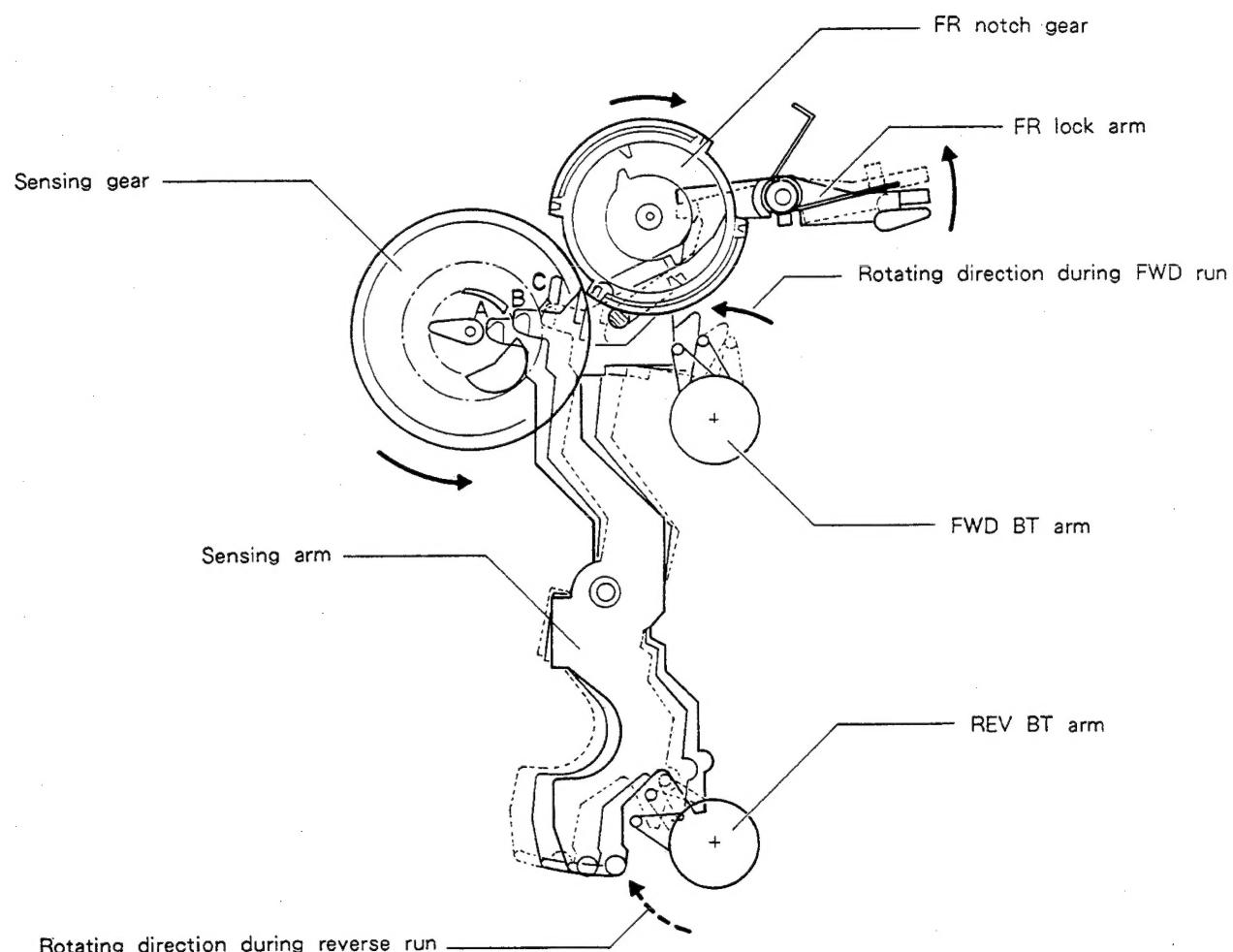


Fig. 17

1. During tape run: The sensing arm keeps oscillation between A and B under a force of the FWD BT arm (or REV BT arm).
2. At end of tape: The force of the BT arm is lost. The sensing arm stops at Position B, then pushed out to Position C by a crescent cam of the sensing gear.

3. Change of run direction:

The FR lock arm turns counter-clockwise along with movement of the sensing arm. The FR notch gear is unlocked and begins to turn.